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July 9, 2010  
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San Francisco Bay Region  
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Subject: Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings  
386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830  
UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California

Dear Ms. Naito and Mr. Simon:

Enclosed is a copy of the Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California.

This document was prepared by CH2M HILL on behalf of Lennar Mare Island, LLC (LMI), as part of the scope of the Environmental Services Cooperative Agreement to complete remaining environmental work at Mare Island, and in accordance with the Consent Agreement between LMI, City of Vallejo, and the California Environmental Protection Agency, Department of Toxic Substances Control.

Please submit your comments to me at the above address or via e-mail at [Stephen.Farley@ch2m.com](mailto:Stephen.Farley@ch2m.com) by August 9, 2010.

If you have any questions regarding this document, please contact me at 707/562-1015 extension 103 or Paula Bolio at 510/587-7748.

Sincerely,

CH2M HILL

A handwritten signature in black ink, reading "Stephen Farley".

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*Report*

**Site Summary Report for the  
Storm Sewer System near IR19,  
IR21/Buildings 386/388/390 Area,  
PCB Site Building 678 AL#04,  
and PCB Site Building 830 UL#01  
in Investigation Area C2,  
Lennar Mare Island,  
Vallejo, California**

Prepared for  
**Regulatory Agencies**

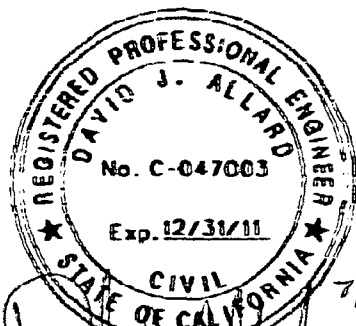
July 2010

**CH2MHILL**

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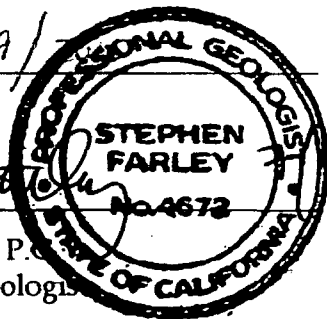
**Site Summary Report for the Storm Sewer System near IR19,  
IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04,  
and PCB Site Building 830 UL#01 in Investigation Area C2,  
Lennar Mare Island,  
Vallejo, California**

This report was prepared under the direct supervision of a Professional Engineer and a Professional Geologist registered with the State of California, whose signatures appear below.



David Allard, P.E.  
Civil Engineer  
CH2M HILL

Date: 7/9/10



Stephen Farley, P.G.  
Professional Geologist  
CH2M HILL

Date: 7/9/10

Prepared by:  
CH2M HILL

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# Acronyms and Abbreviations

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µg/L	micrograms per liter
bgs	below ground surface
CB	catch basin
CCTV	closed-circuit television
COC	constituent of concern
DTSC	State of California Environmental Protection Agency, Department of Toxic Substances Control
EETP	Eastern Early Transfer Parcel
IA	Investigation Area
ICS	Innovative Construction Solutions
IR	Installation Restoration
IT	IT Corporation
J	Estimated concentration
LMI	Lennar Mare Island, LLC
LUC	land use covenant
mg/kg	milligrams per kilogram
MH	manhole
Navy	United States Department of Navy
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
RSL	regional screening level
TPH	total petroleum hydrocarbons
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
VSFCD	Vallejo Sanitation and Flood Control District
Water Board	California Regional Water Quality Control Board, San Francisco Bay Region
Y	Fuel Pattern (TPH only)



# 1.0 Introduction

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CH2M HILL prepared this Site Summary Report on behalf of Lennar Mare Island, LLC (LMI) for the storm sewer system located near Installation Restoration Program Site (IR) 19 (IR19), the IR21/Buildings 386/388/390 Area, Polychlorinated Biphenyl (PCB) Site Building 678 AL#04 and PCB Site

Building 830 UL#01 in Investigation Area (IA) C2, Lennar Mare Island, Vallejo, California. This report was prepared in accordance with the Consent Agreement (LMI et al. 2001) signed April 16, 2001, by LMI, the City of Vallejo, and the State of California Environmental Protection Agency, Department of Toxic Substances Control (DTSC).

## 1.1 Purpose

This Site Summary Report summarizes the investigations and cleaning actions performed for the storm sewer system near the sites listed above in IA C2 at the Eastern Early Transfer Parcel (EETP) of the former Mare Island Naval Shipyard. The location of the EETP is shown in Figure 1-1. In addition, this Site Summary Report provides the information necessary to support the conclusion that additional investigation/remedial activities are not required for the storm sewer system near these sites.

## 1.2 Background

The storm sewer system at the EETP is a network of catch basins (CBs), manholes (MHs), and pipelines to handle surface water runoff, which is then discharged to Mare Island Strait or the west side of Mare Island at several outfall locations. Before 1959, sanitary and industrial wastes were discharged to the storm sewer system.

The storm sewer system was constructed of vitrified clay pipe, corrugated metal pipe, asphalt-coated corrugated metal pipe, transite concrete, reinforced concrete pipe, and sections of other materials. The MHs and CBs vary in depth, size, shape, and construction materials. CBs were designed as shallow basins with sediment traps. Many of the older CBs and MHs are constructed of brick, whereas some of the newer basins are made of concrete. The features and condition of the storm sewer system were described in *Final Post-Construction Report Storm Drain Cleaning, Former Mare Island Naval Shipyard Vallejo, California* (IT Corporation 2002). As described in that report, the pipelines range from good to poor, and several contain cracks, separated joints, damaged mortar, and leaking joints. Portions of the storm sewer pipelines nearest the Mare Island Strait are also tidally influenced, and many of the outfalls do not have tidal gates (IT Corporation 2002). The storm sewer system at the EETP is currently operated by the Vallejo Sanitation and Flood Control District (VSFCD).

The storm sewer system was evaluated for IAs within the EETP that have not yet received no further action certification. The storm sewer system in these IAs was discussed in the Site Identification Technical Memoranda (CH2M HILL 2002a-e, 2003). Table 1-1 lists the

conclusions of the respective technical memoranda and the agency approval letters, where applicable.

TABLE 1-1

Site Identification Technical Memorandum Conclusions and Agency Approval  
*Site Summary Report for the Storm Sewer System Near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04, and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California*

IA	Site Identification Technical Memorandum Conclusion and Date of Agency Approval
B.1, B.2-1 and B.2-2	<p>The <i>Final Investigation Area B Site Identification Technical Memorandum</i> (CH2M HILL 2002a) concluded that the storm sewer system would not be carried forward as a site of environmental concern.</p> <p>DTSC approved this report on January 15, 2003 (DTSC 2003a). Water Board deferred approval of this report to DTSC during an agency meeting on December 17, 2002 (CH2M HILL 2002f).</p>
C1	<p>The <i>Final Investigation Area C1 Site Identification Technical Memorandum</i> (CH2M HILL 2002b) concluded that the storm sewer system would not be carried forward as a site of environmental concern.</p> <p>DTSC approved this report on February 20, 2003 (DTSC 2003b). Water Board approved the <i>Final Investigation Area C2 Site Identification Technical Memorandum</i> by approving the <i>Final IA C1 Remedial Investigation/Feasibility Study Report</i> (CH2M HILL 2006a) on February 4, 2009 (Water Board 2009).</p>
C2	<p>The <i>Final Investigation Area C2 Site Identification Technical Memorandum</i> (CH2M HILL 2002c) concluded that the storm sewer system would not be carried forward as a site of environmental concern.</p> <p>DTSC approved this report on May 20, 2003 (DTSC 2003c). Water Board approved this report with exception to Building 862 and 868 on February 13, 2003 (Water Board 2003a). These two sites (Oil House Site 862 and 868) are petroleum sites that are separately addressed under the underground storage tank program in accordance with Water Board Order R2-2002-0105.</p>
C3	<p>The <i>Final Investigation Area C3 Site Identification Technical Memorandum</i> (CH2M HILL 2002d) concluded that, other than the storm sewer system located between Dry Dock No. 1 and Dry Dock No. 2 (discussed below), there are no other sites of environmental concern associated with the storm sewer system.</p> <p>DTSC approved this report on January 17, 2003 (DTSC 2003d). Water Board approved this report on January 8, 2003 (Water Board 2003b).</p>
D.1-3	<p>The <i>Final Investigation Area D1 Site Identification Technical Memorandum</i> (CH2M HILL 2003) concluded that the storm sewer system would not be carried forward as a site of environmental concern.</p> <p>DTSC approved this report on November 6, 2003 (DTSC 2003e). Water Board approved this report on November 4, 2003 (Water Board 2003c).</p>
H2	<p>The <i>Final Investigation Area H2 Site Identification Technical Memorandum</i> (CH2M HILL 2002e) concluded that the storm sewer system would not be carried forward as a site of environmental concern.</p> <p>DTSC approved this report on January 10, 2003 (DTSC 2003f). Water Board approved this report on January 8, 2003 (Water Board 2003d).</p>

As mentioned in Table 1-1, the storm sewer system between Dry Dock No. 1 and Dry Dock No. 2 in IA C3 was identified as a site of environmental concern in the *Final Investigation Area C3 Site Identification Technical Memorandum* (CH2M HILL 2002d). The storm sewer system in this area is addressed as part of PCB Site Building 516 AL#01. Selected storm

sewer CBs, MHs, and portions of the storm sewer pipelines at PCB Site Building 516 AL#01 were inspected and removed as documented in the *Site Characterization and Cleanup Action Summary Report for Polychlorinated Biphenyl Sites Building 516 and 516A Investigation Area C3, Lennar Mare Island, California* (CH2M HILL 2007) and "Response to Department of Toxic Substances Control Comments on the Site Characterization and Cleanup Action Summary Report for the Storm Sewer System near Polychlorinated Biphenyl Site Building 516 AL#01, Investigation Area C3, Lennar Mare Island, Vallejo, California" (CH2M HILL 2009a). DTSC issued closure approval for PCB Site Building 516A UL#01 on July 18, 2007 (DTSC 2007a) and Building 516 AL#01 on April 22, 2009, pending recordation of a land use covenant (LUC) restricting the site to industrial/commercial uses (DTSC 2009a). The United States Environmental Protection Agency (USEPA) issued closure approval for PCB Site Buildings 516 AL#01 and 516A AL#01 on August 31, 2009 (USEPA 2009a); therefore, this site is not addressed in this Site Summary Report.

Following the issuance of the IA Site Identification Technical Memoranda, the storm sewer system located immediately downgradient of the following sites was identified for further evaluation:

- PCB Site Building 535 AL#01
- IR19
- IR21/Buildings 386/388/390 Area
- PCB Site 678 AL#04
- PCB Site Building 830 UL#01

### 1.2.1 PCB Site Building 535 AL#01

One MH downstream of the storm sewer system associated with PCB Site Building 535 AL#01 is located within IA B.2-1. A concrete chip sample from this MH had a reported total PCB concentration of 2 milligrams per kilogram (mg/kg). DTSC requested additional investigation of the storm sewer system near Building 535 AL#01 in comments to the *Site Characterization and Cleanup Summary Report for PCB Site At Building 535 AL#01 and AL#02 in Investigation Area B.2* (CH2M HILL 2008) on March 25, 2008 (DTSC 2008). Remedial actions at PCB Site Building 535 AL#01 are being performed in accordance with the "Addendum to the Cleanup Plan for Polychlorinated Biphenyl Site Building 535 AL#01 in Investigation Area B.2" (CH2M HILL 2009b) and "Addendum to the Notification Regarding Self-implementing, Onsite Cleanup and Disposal of Polychlorinated Biphenyl Remediation Waste at Polychlorinated Biphenyl Site Building 535 AL#01 in Investigation Area B.2" (CH2M HILL 2009c). Future actions, if necessary, may be included in "Addendum to the Site Characterization and Cleanup Action Summary Report for Polychlorinated Biphenyl Sites Building 535 AL#01, Investigation Area B.2" (CH2M HILL pending(a)). Following completion of remedial actions at PCB Site Building 535 AL#01, an implementation report will be submitted to DTSC and the USEPA documenting work performed and requesting closure of PCB Site Building 535 AL#01 and the associated storm sewer system. In addition, a PCB-specific LUC will be implemented at this site to prohibit sensitive land uses. Therefore, this site is not addressed in this Site Summary Report.

## 1.2.2 IR19

During storm sewer system sampling and cleaning activities performed at the EETP by IT Corporation for the Department of the Navy (Navy) in 2000 (IT Corporation 2002), tetrachloroethene (PCE) was detected in sediment (18.5 mg/kg) and water (1,610 micrograms per liter [µg/L]) collected from MH D1-M13 (sample locations SD-002 and W-002, respectively, in Figure 1-2). The sediment and water were subsequently removed by IT Corporation in 2001 (IT Corporation 2002). MH D1-M13 is located at the southern boundary of IR19, as shown in Figure 1-2. DTSC requested additional characterization of MH D1-M13 to address this historical detection of PCE in sediment and water during a telephone conversation with CH2M HILL on January 14, 2009 (DTSC 2009b). On the basis of these results, this site is discussed further in this Site Summary Report.

## 1.2.3 IR21/Buildings 386/388/390 Area

As part of the storm sewer system sampling and cleaning activities performed by IT Corporation for the Navy in 2001 (IT Corporation 2002), sediment and water were removed from CBs and MHs located downgradient and across Railroad Avenue from the IR21/Buildings 386/388/390 Area. Sediment and water were not removed from CBs and MHs adjacent to the site. In comments to the *Draft Removal Action Work Plan for the IR21 Area, Lennar Mare Island, Vallejo, California* (CH2M HILL 2006b), DTSC requested more information regarding the storm sewer system near the IR21/Buildings 386/388/390 Area (DTSC 2007b). The location of the IR21/Buildings 386/388/390 Area is shown in Figure 1-3. On the basis of this request for information, this site is discussed further in this Site Summary Report.

## 1.2.4 PCB Site Building 678 AL#04

PCB Site Building 678 AL#04 is an active outdoor transformer pad located west of Building 678, as shown in Figure 1-4. As part of the PCB program, a sediment sample (B678AL04-0809) was collected in June 2004 from the bottom of the adjacent CB B678GB1 located at the southwest corner of the transformer pad. Although Figure 1-4 shows that the sample B678AL04-0809 was collected at 0 feet below ground surface (bgs), this sample was collected from sediment that had accumulated in the bottom of the storm sewer B678GB1 at 3 feet bgs, as summarized in *Site Characterization and Cleanup Action Summary Report for Polychlorinated Biphenyl Site Building 678 AL#04, Investigation Area C2, Lennar Mare Island, Vallejo, California* (CH2M HILL pending(b)), the total PCB concentration in this sediment sample was 0.95 mg/kg, which exceeded the USEPA Region 9 industrial regional screening level (RSL) of 0.74 mg/kg for total PCBs in soil (USEPA 2009b). On the basis of these results, this site is discussed further in this Site Summary Report.

## 1.2.5 PCB Site Building 830 UL#01

PCB Site Building 830 UL#01 is an electrical substation located inside of Building 830. Because this site is located in an enclosing cinder block structure that has no roof and contains drain holes, it is considered an outdoor structure with potential to impact downgradient CBs/MHs. As discussed in the *Polychlorinated Biphenyl Site Building 830 UL#01 (Electric Substation 22) in Investigation Area C2, Where No Further Action Is Required under the Department of Toxic Substances Control Consent Agreement and Polychlorinated*

*Biphenyl Site Building 830 UL#01 (Electric Substation 22) in Investigation Area C2, Where No Further Action Is Required under the United States Environmental Protection Agency Consent Agreement and Final Order (CH2M HILL 2009d-e), this electric substation once contained PCBs in transformer oil and concrete chip samples with concentrations up to 271 mg/kg and 6.95 mg/kg (sample location 7294-0253 in Figure 1-5), respectively. The nearest CB (B830CB1) to PCB Site Building 830 UL#01 is located south of Building 830, shown in Figure 1-5. On the basis of these results, this site is discussed further in this Site Summary Report.*

## 1.3 Report Organization

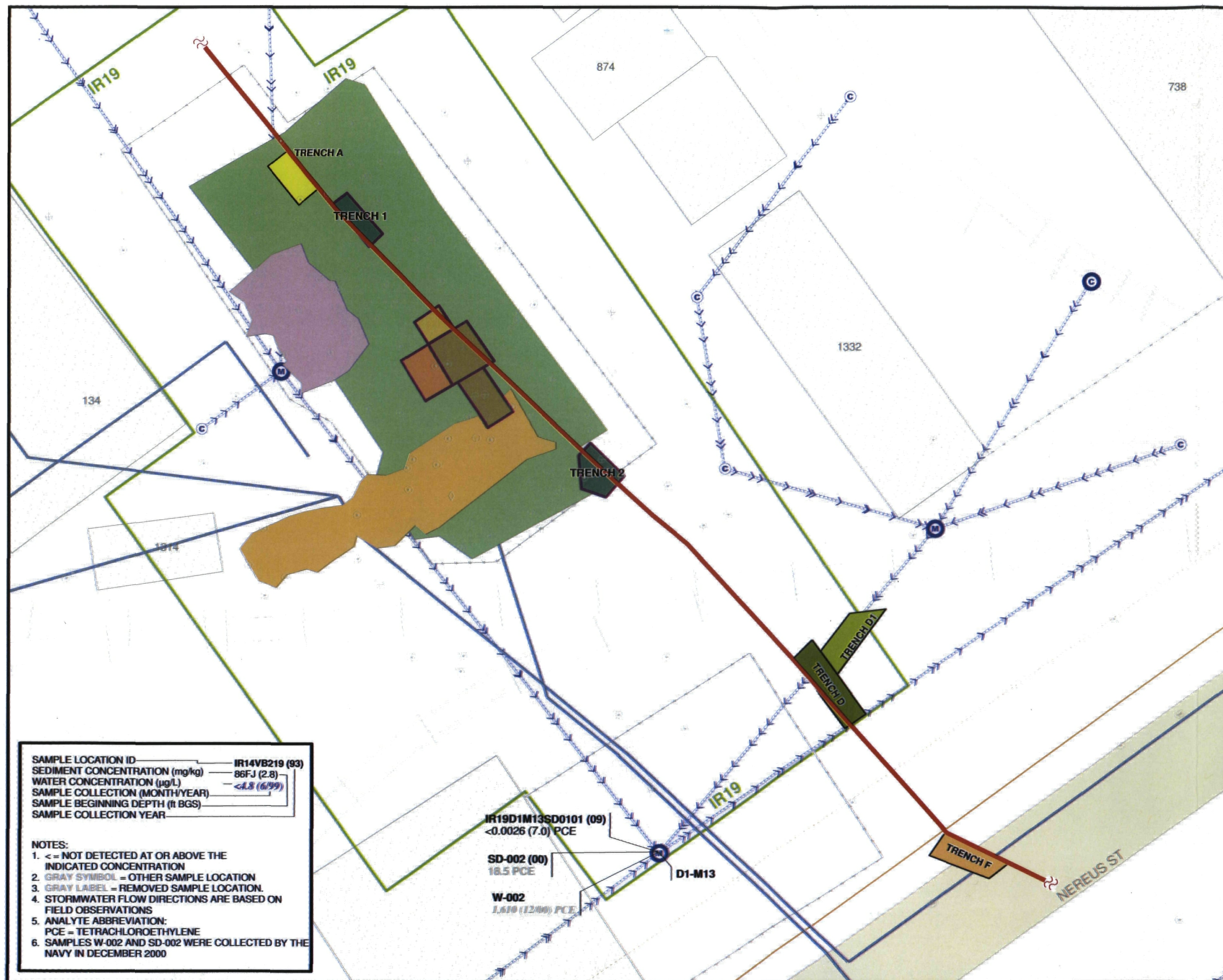
This Site Summary Report is organized into the following sections:

- **Section 1.0, Introduction**, presents the background and a brief overview of the contents of this document.
- **Section 2.0, Storm Sewer System Sampling Activities, Applicable Screening Level Criteria, and Results** summarizes the storm sewer system sampling activities, screening level criteria, and sample results for each of the storm sewer sites evaluated in IA C2.
- **Section 3.0, IR21 Buildings 386/388/390 Area Cleaning Activities**, outlines cleanup criteria and summarizes cleaning activities, results, and post-cleanup activities.
- **Section 4.0, Conclusions and Criteria for Obtaining Site Closure**, summarizes the rationale for site closure.
- **Section 5.0, References**, presents references for documents used to prepare this Site Summary Report.



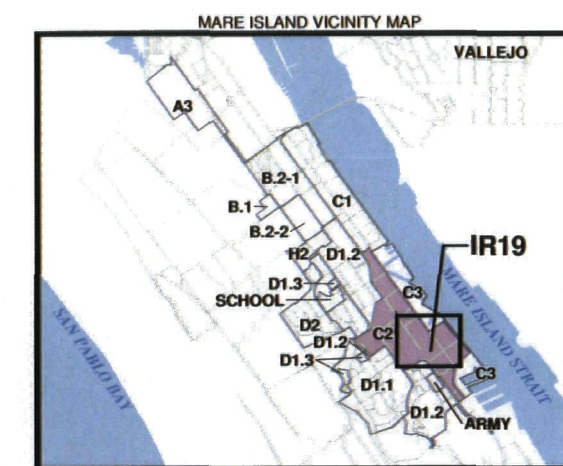






**SAMPLE LOCATION ID** — IR14VB219 (93)  
**SEDIMENT CONCENTRATION (mg/kg)** — 86FJ (2.8)  
**WATER CONCENTRATION (µg/L)** — <4.8 (6/99)  
**SAMPLE COLLECTION (MONTH/YEAR)** —  
**SAMPLE BEGINNING DEPTH (ft BGS)** —  
**SAMPLE COLLECTION YEAR** —

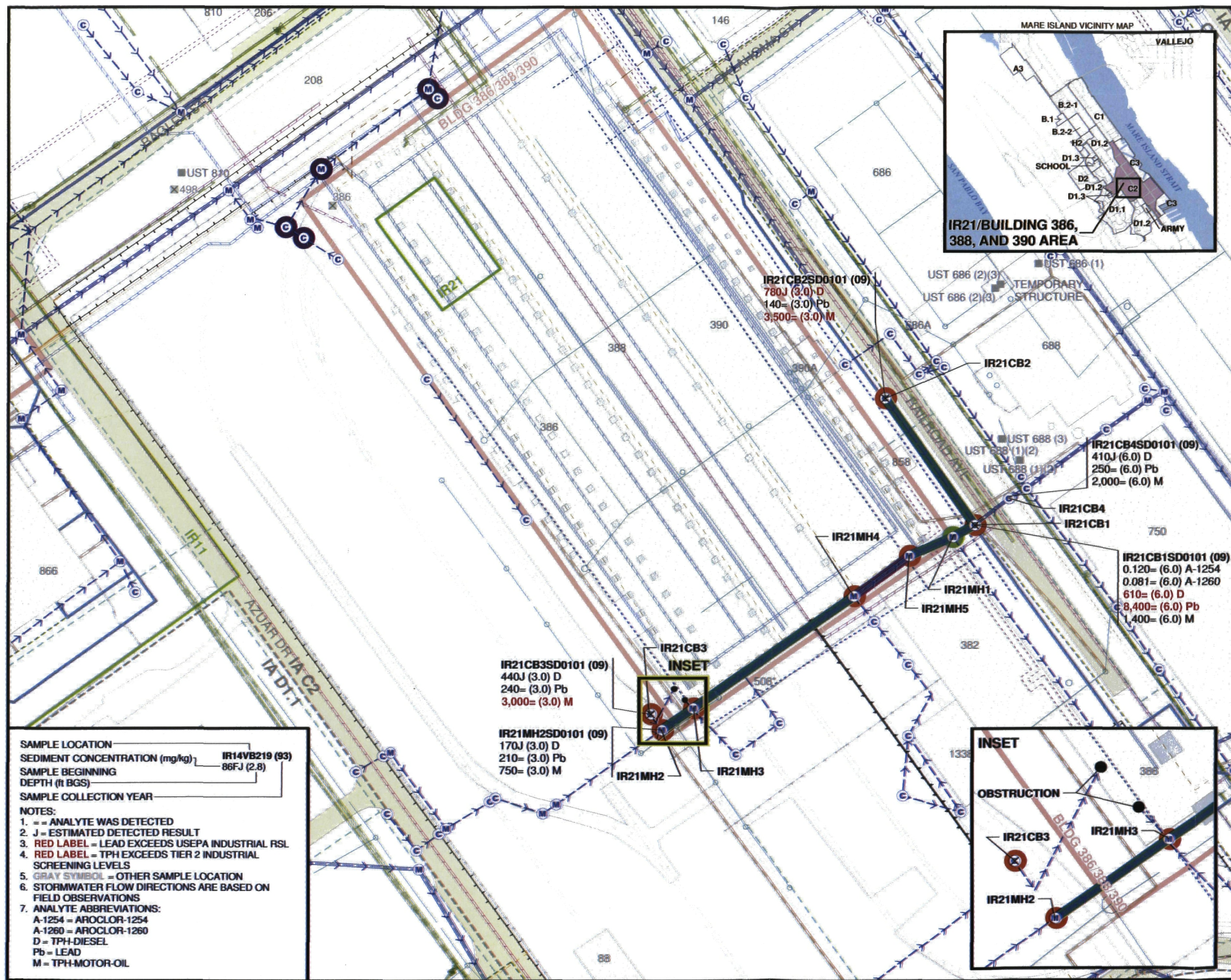
**NOTES:**  
 1. < = NOT DETECTED AT OR ABOVE THE INDICATED CONCENTRATION  
 2. GRAY SYMBOL = OTHER SAMPLE LOCATION  
 3. GRAY LABEL = REMOVED SAMPLE LOCATION  
 4. STORMWATER FLOW DIRECTIONS ARE BASED ON FIELD OBSERVATIONS  
 5. ANALYTE ABBREVIATION:  
 PCE = TETRACHLOROETHYLENE  
 6. SAMPLES W-002 AND SD-002 WERE COLLECTED BY THE NAVY IN DECEMBER 2000



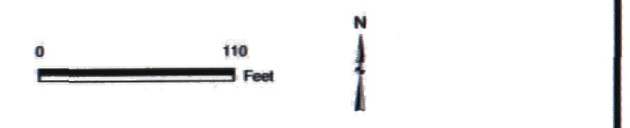
- LEGEND**
- ⊙ STORM SEWER CATCHBASIN
  - ⊙ STORM SEWER MANHOLE
  - CLEANED IN 2001
  - > STORMWATER FLOW DIRECTION
  - FENCE
  - RAILROAD
  - FLUSHED FUEL-OIL PIPELINE
  - FUEL-OIL PIPELINES NOT FOUND
  - INDUSTRIAL WASTEWATER PIPELINE
  - STORMWATER PIPELINE
  - ELECTRICAL UTILITY VAULT
  - ~ ~ ~ CONTINUATION OF ELECTRICAL LINE
  - 2009 TRENCH TO 7-FEET BGS
  - 2009 TRENCH TO 7.1-FEET BGS
  - 2009 EXCAVATION TO 8-FEET BGS
  - 2009 TRENCH TO 8.8-FEET BGS
  - 2008/2009 EXCAVATION TO 4-FEET BGS
  - 2008/2009 EXCAVATION TO 4.5-FEET BGS
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  - 2008/2009 TRENCH TO 9-FEET BGS
  - 2003 EXCAVATION TO 6 FEET BGS
  - 2003 EXCAVATION TO 7 FEET BGS
  - 2003 EXCAVATION TO 1-8 FEET BGS
  - GROUP I SITE
  - GROUP II, III SITE
  - ROAD
  - STRUCTURE

**FIGURE 1-2**  
**PCE IN SEDIMENT AND WATER**  
**AT THE STORM SEWER NEAR IR19**  
 SITE SUMMARY REOPORT FOR THE STORM SEWER SYSTEM NEAR IR19, IR21/BUILDINGS 386/388/390 AREA, PCB SITE BUILDING 678 AL#04, AND PCB SITE BUILDING 830 UL#01 IN INVESTIGATION AREA C2, LENNAR MARE ISLAND, VALLEJO CALIFORNIA





- LEGEND**
- X SEDIMENT SAMPLE
  - UNDERGROUND STORAGE TANK UNKNOWN
  - UNDERGROUND STORAGE TANK
  - C STORM SEWER CATCHBASIN
  - M STORM SEWER MANHOLE
  - CLEANED IN 2009
  - NOT VISIBLE DURING 2009 SITE VISIT
  - 1-INCH DIAMETER ELECTRICAL CONDUIT OBSERVED
  - > STORMWATER FLOW DIRECTION
  - SECTION OF BOTTOM OF STORM WATER PIPELINE MISSING
  - STORMWATER PIPELINE FLUSHED/RINSED
  - STORMWATER BACKBONE
  - STORMWATER SERVICE LINE
  - UNDERGROUND ELECTRICAL UTILITY
  - INDUSTRIAL WASTEWATER PIPELINE
  - BACKBONE SEWER PIPELINE
  - SEWER SERVICE LINE
  - GAS PIPELINE
  - OTHER WATER PIPELINE
  - AIR PIPELINE
  - COMPRESSED AIR PIPELINE
  - EXISTING DREDGE PIPELINE
  - EXISTING FRESHWATER PIPELINE
  - ABANDONED FUEL-OIL PIPELINE
  - FLUSHED FUEL-OIL PIPELINE
  - FUEL-OIL PIPELINES NOT FOUND
  - REMOVED FUEL-OIL PIPELINE
  - UNKNOWN FUEL-OIL PIPELINE
  - SALTWATER PIPELINE
  - STEAM PIPELINE
  - FENCE
  - RAILROAD
  - INVESTIGATION AREA
  - GROUP I SITE
  - GROUP II, III SITE
  - BUILDING FOOTING
  - STRUCTURE
  - ROAD

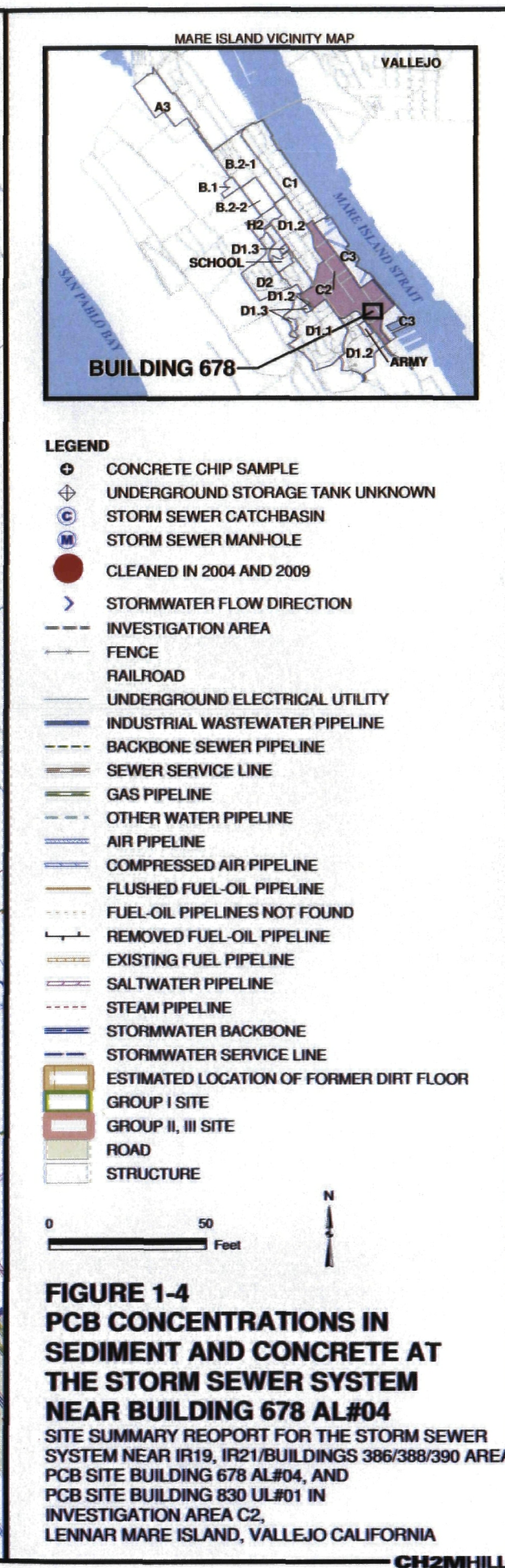
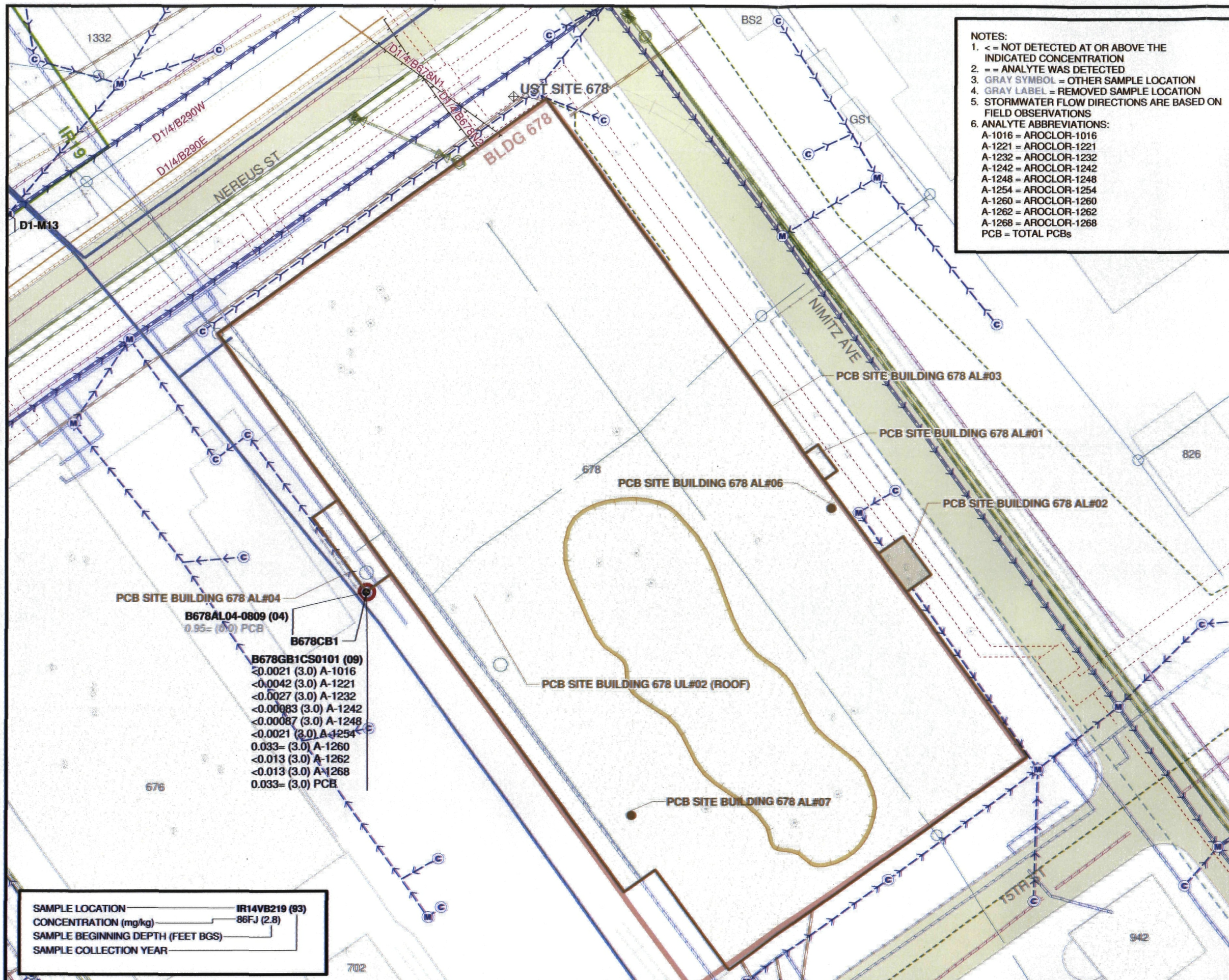


**FIGURE 1-3  
LEAD, TPH-DIESEL, TPH-MOTOR-OIL,  
AND PCB CONCENTRATIONS  
IN SEDIMENT AT THE STORM SEWER  
SYSTEM NEAR IR21/BUILDINGS  
386/388/390 AREA**  
SITE SUMMARY REPORT FOR THE STORM SEWER  
SYSTEM NEAR IR19, IR21/BUILDINGS 386/388/390 AREA  
PCB SITE BUILDING 678 AL#04, AND  
PCB SITE BUILDING 830 UL#01 IN  
INVESTIGATION AREA C2,  
LENNAR MARE ISLAND, VALLEJO CALIFORNIA

**SAMPLE LOCATION**  
SEDIMENT CONCENTRATION (mg/kg) IR14VB219 (93)  
86FJ (2.8)  
SAMPLE BEGINNING  
DEPTH (ft BGS)  
SAMPLE COLLECTION YEAR

**NOTES:**  
1. == ANALYTE WAS DETECTED  
2. J = ESTIMATED DETECTED RESULT  
3. RED LABEL = LEAD EXCEEDS USEPA INDUSTRIAL RSL  
4. RED LABEL = TPH EXCEEDS TIER 2 INDUSTRIAL  
SCREENING LEVELS  
5. GRAY SYMBOL = OTHER SAMPLE LOCATION  
6. STORMWATER FLOW DIRECTIONS ARE BASED ON  
FIELD OBSERVATIONS  
7. ANALYTE ABBREVIATIONS:  
A-1254 = AROCLOR-1254  
A-1260 = AROCLOR-1260  
D = TPH-DIESEL  
Pb = LEAD  
M = TPH-MOTOR-OIL











## 2.0 Sampling Activities, Applicable Screening Level Criteria, and Results

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CH2M HILL initiated the storm sewer CB and MH sampling activities in March 2009 near the sites in IA C2 discussed in Section 1.2.2 through 1.2.5. Because PCB Site Building 535 AL#01 and PCB Site Building 516 AL#01 are separately addressed under the PCB Program, the storm sewer system sampling activities included CBs and MHs located immediately downgradient of IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04, and PCB Site Building 830'UL#01. The storm sewer system sampling consisted of an initial round of sediment or concrete chip sampling and analysis. If sediment was present, a composite sample was collected from accumulated sediments in the bottom of the CB or MH and was submitted for analysis of the known constituents of concern (COCs) encountered at the immediately upgradient site. Concrete chip samples were collected from the bottom of the CBs at sites immediately downgradient of PCB sites. If the analytical results of the first round of sampling exceeded screening levels then step-out sampling to CBs/MHs located along the storm sewer pipeline was performed to evaluate the concentrations of COCs downgradient in the pipeline. Additional information regarding the storm sewer system sampling activities and the results for the four sites described above are provided below. CH2M HILL-validated analytical results are included Appendix A, and the unvalidated laboratory analytical reports are included in Appendix B.

The sampling activities described below were presented to DTSC and Water Board during an agency meeting on February 10, 2009 (CH2M HILL 2009f). DTSC and Water Board verbally approved CH2M HILL's sampling plan, including screening criteria, during this meeting. DTSC also approved the sampling activities in an email dated December 9, 2009 (DTSC 2009c).

### 2.1 IR19

#### 2.1.1 Sampling Activities

Based on DTSC's request to address the historical detection of PCE in sediment and water in MH D1-M13 (DTSC 2009b), CH2M HILL collected a composite sample (IR19D1M13SD0101) from accumulated sediments in the bottom of MH D1-M13 at 7 feet bgs in March 2009 (Figure 1-2). The sediment sample was analyzed for volatile organic compounds (VOCs), including PCE (USEPA Method 8260B).

#### 2.1.2 Screening-level Criteria

The analytical results for VOCs in the sediment sample were compared to the USEPA industrial RSLs (USEPA 2009b).

### 2.1.3 Results

VOCs in the sediment sample collected from the bottom of MH D1-M13 (IR19D1M13SD0101) were not detected above laboratory reporting limits. In addition, laboratory reporting limits did not exceed USEPA industrial RSLs. Specifically, the PCE concentration (0.0026mg/kg) did not exceed the USEPA industrial RSL of 2.7 mg/kg (USEPA 2009b). Therefore, additional investigation / remedial activities are not required for the storm sewer system near IR19. The sample results and request for no additional investigation/remedial activities for the storm sewer system near IR19 were presented to DTSC and the Water Board during an agency meeting on April 28, 2009 (CH2M HILL 2009e). DTSC and Water Board verbally approved no additional investigation/remedial activities are required for the storm sewer system near IR19 during this agency meeting. DTSC also approved no additional investigation / remedial activities are necessary for the storm sewer system near IR19 via an email on December 9, 2009 (DTSC 2009c).

## 2.2 IR21/Buildings 386/388/390 Area

### 2.2.1 Sampling Activities

To address DTSC's comments (DTSC 2007b) to the *Draft Removal Action Work Plan for the IR21 Area* (CH2M HILL 2006b), CH2M HILL collected a composite sample (IR21CB1SD0101) from accumulated sediments in the bottom of IR21CB1, located between Building 382 and Building 390 west of Railroad Avenue (Figure 1-3), in March 2009. This location was selected because it is located at a storm sewer pipeline junction that receives water from pipelines running along the east side of Building 390 and along the south side of Buildings 386/388/390. The sediment sample was collected at 6 feet bgs and was submitted for analysis of total petroleum hydrocarbons (TPH) as diesel (TPH-diesel) and TPH as motor oil (TPH-motor-oil) using USEPA Method 8015B, for lead using USEPA Method 6010B, and for PCBs using USEPA Method 8082. Analysis was based on the known COCs identified for the IR21/Buildings 386/388/390 Area in the *Final Feasibility Study/Removal Action Work Plan for IR21 and the Buildings 386/388/390 Area, Investigation Area C2, Lennar Mare Island, Vallejo, California* (CH2M HILL 2009g). Based on the analytical results found in the sediment sample collected from CB IR21CB1, step-out sampling along the storm sewer pipeline interior was performed in April and May 2009. The step-out sampling was performed at two upgradient CBs (IR21CB2 and IR21CB3), one upgradient MH (IR21MH2), and one downgradient CB (IR21CB4) located along the storm sewer pipelines. Composite sediment samples (IR21CB2SD0101, IR21CB3SD0101, and IR21MH2SD0101 at 3 feet bgs and IR21CB4SD0101 at 6 feet bgs) were collected from accumulated sediments in the bottom of the CBs and MH.

### 2.2.2 Screening-level Criteria

The analytical results for TPH-diesel and TPH-motor-oil in the sediment samples were compared to Tier 2 screening levels for shallow soils (0 to 3 feet bgs) at sites located greater than 300 feet of a sensitive receptor (i.e., Mare Island Strait) (CH2M HILL 2009h). The analytical results for lead and PCBs in sediment samples were compared to the USEPA industrial RSL for lead and PCBs in soil (USEPA 2009b).

## 2.2.3 Results

The concentration of TPH-diesel (610 mg/kg) in sediment collected from the bottom of IR21CB1 exceeded the Tier 2 screening level for TPH-diesel of 500 mg/kg (CH2M HILL 2009h). In addition, lead was detected in the sample collected from this CB at a concentration (8,400 mg/kg) above the USEPA industrial RSL of 800 mg/kg (USEPA 2009b). Concentrations of PCBs and TPH-motor-oil in the sediment sample collected from IR21CB1 did not exceed their respective screening levels. As discussed in Section 2.2.1, based on the elevated detections of TPH-diesel and lead in sediment at IR21CB1, step-out sampling along the storm sewer pipelines was performed.

Four total composite samples were collected from the accumulated sediments in the bottom of IR21CB2, IR21CB3, IR21CB4, and IR21MH2. Because PCBs did not exceed screening levels in the sediment sample collected from IR21CB1, these sediment samples were analyzed for TPH-diesel, TPH-motor-oil, and lead. Concentrations of lead were below the USEPA industrial RSL in all four samples. TPH-diesel was detected (780J [J]=estimated) mg/kg) in the sediment sample collected from upgradient IR21CB2, which exceeded the Tier 2 screening level of 500 mg/kg for TPH-diesel (CH2M HILL 2009h). TPH-motor-oil was detected (3,500 mg/kg and 3,000 mg/kg) in sediment samples collected from upgradient IR21CB2 and IR21CB3, respectively, which exceeded the Tier 2 screening level for TPH-motor-oil of 500 mg/kg (CH2M HILL 2009h). Concentrations of TPH-diesel, TPH-motor-oil, and lead were not detected above their respective screening levels in the downgradient IR21CB4.

Because one or more known COCs were detected in sediment above their respective screening levels at the storm sewer CB locations near the IR21/Buildings 386/388/390 Area, cleaning activities were recommended during an agency meeting on April 28, 2009 (CH2M HILL 2009i). CH2M HILL recommended that sediment and water be removed from the impacted CBs, followed by flushing/rinsing of the pipeline segments that connect these structures. DTSC and Water Board verbally approved the cleaning approach during this agency meeting. Additionally, DTSC agreed to the cleaning approach in an email dated December 9, 2009 (DTSC 2009c). Section 3.0 discusses the cleaning activities performed at the storm sewer system near the IR21/Buildings 386/388/390 Area.

## 2.3 PCB Site Building 678 AL#04

### 2.3.1 Sampling Activities

On February 11, 2008, CH2M HILL conducted site maintenance activities at PCB Site Building 678 AL#04 to remove sediment from CB B678GB1 (Figure 1-4), as discussed in the *Site Characterization and Cleanup Action Summary Report for Polychlorinated Biphenyl Site Building 678 AL#04, Investigation Area C2, Lennar Mare Island, Vallejo, California* (CH2M pending(b)). The sediment and water were removed from B678GB1; however, a confirmation sample was not collected following the removal activities. Because PCBs were detected in a sediment sample (B678AL04-0809) collected from the bottom of B678GB1 in June 2004, a confirmation concrete chip sample (B678GB1CS0101) was collected and analyzed for PCBs using USEPA Method 8082 as part of the March 2009 storm sewer system sampling activities. During implementation of the March 2009 storm sewer system sampling

activities, sediment and water were removed from this CB to proceed with the concrete chip sampling. A confirmation concrete chip sample (B678GB1CS0101) was collected from the bottom of B678GB1 at 3 feet bgs and was submitted for analysis of PCBs using USEPA Method 8082.

### **2.3.2 Screening-level Criteria**

The analytical results for the concrete chip sample were compared to the USEPA industrial RSL of 0.74 mg/kg for concrete media (USEPA 2009b).

### **2.3.3 Results**

The total PCB concentration (only Aroclor-1260 detected) (0.033 mg/kg) in the concrete chip sample was less than the USEPA industrial RSL of 0.74 mg/kg for PCBs (USEPA 2009b). Therefore, no additional investigation/remedial activities are required for the storm sewer system located near PCB Site Building 678 AL#04. The sample results and request for no additional investigation/remedial activities for the storm sewer system near PCB Site Building 678 AL#01 were presented to DTSC and the Water Board during an agency meeting on April 28, 2009 (CH2M HILL 2009i). DTSC and Water Board verbally approved no additional investigation/remedial activities are required for the storm sewer system near PCB Site Building 678 AL#04 during an agency meeting on April 28, 2009. Additionally, DTSC approved that no additional investigation/remedial activities are required for the storm sewer system near PCB Site Building 678 AL#04 in an email on December 9, 2009 (DTSC 2009c).

## **2.4 PCB Site Building 830 UL#01**

### **2.4.1 Sampling Activities**

Based on the outdoor location of PCB Site Building 830 UL#01 and the historical detections of PCBs in transformer oil and concrete samples, CB B830CB1, located south of Building 830, was investigated, as shown in Figure 1-5. During the March 2009 sampling activities, sediment, soil, and water were removed from B830CB1 to facilitate collection of a concrete chip sample. Following the removal of sediment, soil, and water, a concrete chip sample (B830CB1CS0101) was collected from the accumulated sediments in the bottom of B830CB1 at 3.5 feet bgs. The sample was analyzed for PCBs using USEPA Method 8082.

### **2.4.2 Screening-level Criteria**

The analytical results for the concrete chip sample were compared to the USEPA industrial RSL of 0.74 mg/kg (USEPA 2009b).

### **2.4.3 Results**

Concentrations of total PCBs (0.055J mg/kg) in the concrete chip sample did not exceed the USEPA industrial RSL of 0.74 mg/kg (USEPA 2009b); therefore, no additional investigation/remedial activities are required for the storm sewer system near PCB Site Building 830 UL#01. The sample results and request for no additional investigation/remedial activities for the storm sewer system near PCB Site Building 830 UL#01 were

presented to DTSC and the Water Board during an agency meeting on April 28, 2009 (CH2M HILL 2009i). DTSC and Water Board verbally approved no additional investigation/remedial activities are required for the storm sewer system near PCB Site Building 830 UL#01 during the agency meeting. Additionally, DTSC approved no additional investigation/remedial activities are required for the storm sewer system near PCB Site Building 830 UL#01 in an email on December 9, 2009 (DTSC 2009c).

## 3.0 IR21/Buildings 386/388/390 Area Cleaning Activities

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As discussed in Section 2.2, lead, TPH-motor-oil, and TPH-diesel were detected in sediment samples collected from the bottom of three CBs (IR21CB1, IR21CB2, IR21CB3) at the storm sewer system near the IR21/Buildings 386/388/390 Area at levels above their respective screening levels, as shown in Figure 1-3. To address these detections in sediment above screening levels, the storm sewer system cleaning activities included the removal of sediment and water from the impacted storm sewer CBs followed by flushing/rinsing the pipeline segments (approximately 600 lineal feet) that connect these structures. CH2M HILL proposed this approach to DTSC and Water Board during an agency meeting on April 28, 2009 (CH2M HILL 2009i). DTSC agreed to this approach in an email correspondence dated December 9, 2009 (DTSC 2009c).

### 3.1 Cleaning Activities and Cleanup Objectives

In May 2009 and March 2010, as part of the storm sewer system cleaning near the IR21/Buildings 386/388/390 Area, CH2M HILL:

- Conducted closed-circuit television (CCTV) video inspection of the storm sewer pipeline segments prior to cleaning activities.
- Conducted a site reconnaissance of the storm sewer CBs/MHs and pipelines.
- Removed sediment/water from three CBs (IR21CB1, IR21CB2 and IR21CB3) where lead, TPH-motor-oil, and TPH-diesel were detected above screening levels followed by pressure washing these CBs. Sediment and water were removed from four MHs (IR21MH2, IR21MH3, IR21MH4, and IR21MH5), followed by pressure washing of these MHs to facilitate cleaning activities.
- Flushed/rinsed three storm sewer pipeline segments (between MH2 and MH4, MH5 and CB1, and CB1 and CB2) connecting the CB/MH structures.
- Collected a confirmation rinsate samples from the nearest CB or MH connected to each of the three flushed pipeline segments.
- Analyzed the three rinsate water samples for lead, TPH-motor-oil, and TPH-diesel and compared the analytical results to Tier 2 screening levels for groundwater at sites located greater than 300 ft from a sensitive receptor (CH2M HILL 2009h).
- Conducted CCTV video inspection of the flushed/rinsed storm sewer pipeline segments following the completion of cleaning activities.
- Performed a pipeline tracer video inspection at IR21CB3.
- Disposed waste sediment, solids and water generated from the storm sewer system cleaning activities in accordance with appropriate state and federal requirements.



## 3.2 Subcontractors

The March 2010 storm sewer system cleaning activities included the following subcontractors:

- **Innovative Construction Solutions, Norcal (ICS):** Supervised the storm sewer system cleaning activities.
- **Subtronic Corporation:** Conducted CCTV video inspections of the pipeline segments and a pipeline tracer video inspection at storm sewer IR21CB3.
- **KM Industrial:** Conducted vacuum removal of sediment/water from the storm sewer CBs/MHs, pressure washing of the CBs/MHs, and flushing/rinsing of the storm sewer pipeline segments.

## 3.3 Summary of Cleaning Activities

Between March 22 and 31, 2010, CH2M HILL performed storm sewer system cleaning activities near the IR21/Building 386/388/390 Area. This section summarizes the cleanup activities.

### 3.3.1 Pre-cleaning Activities – CCTV Video Inspection

Prior to the cleaning activities in March 2010, Subtronic Corporation performed a CCTV video inspection on May 19, 2009. The CCTV video inspection was conducted to evaluate the storm sewer pipeline conditions prior to performing the flushing/rinsing activities for these pipelines. During the pre-cleaning CCTV video inspection, the storm sewer pipelines were observed to contain cracks, joint offsets, pipe diameter changes, and lateral pipeline connections. Additionally, it was discovered that the bottom of the storm sewer pipeline between MH4 and MH5 was missing, as shown in Figure 3-1. Due to the amount of debris (e.g., rocks, mud, wood) in the storm sewer pipelines, the CCTV inspection could not be performed along the entire length (approximately 600 lineal feet) of the storm sewer pipelines proposed for cleaning. Specifically, the storm sewer pipeline exiting IR21CB3 (Figures 3-1) could not be inspected because it was full of sediment and water; the storm sewer pipeline segment between IR21CB1 and IR21CB2 could not be fully inspected because it was full of mud; and the storm sewer pipeline segment between IR21MH4 and IR21MH5 could not be inspected beyond the broken segment.

CH2M HILL reviewed the CCTV video inspection report with the VSFCDD on October 6, 2009. The proposed cleaning activities were submitted to the VSFCDD in a letter dated November 13, 2009 (CH2M HILL 2009j). The VSFCDD responded to this letter in an email on December 10, 2009 (VSFCDD 2009), which stated that the VSFCDD agreed to the proposed cleaning activities and understands that the storm sewer pipelines are in poor condition. In this email, the VSFCDD requested that CCTV video inspection be performed following completion of the storm sewer system cleaning activities to document the condition of the pipelines.

### 3.3.2 Pre-cleaning Activities – Site Reconnaissance

ICS mobilized to the site on March 22, 2010, and a site reconnaissance was conducted with CH2M HILL to facilitate the planned storm sewer system cleaning activities. The following observations were made during the site reconnaissance:

- Several CBs/MHs shown on storm sewer Navy Quad maps for the site could not be located. The storm sewer Navy Quad maps were used to create the storm sewer configuration at the IR21/Buildings 386/388/390 Area shown in Figures 1-3 and 3-1 through 3-3. The CBs and MHs that appear on storm sewer Navy Quad maps that were not observed at the site are shown in these figures. A description of stormwater drainage through the storm sewer system near the IR21/Buildings 386/388/390 Area, based on current understanding of site conditions, is discussed in Section 3.3.3.
- A pipeline connection between IR21CB3 and IR21MH2, shown on storm sewer Navy Quad maps for the site, was found to be disconnected. A pipeline exiting IR21CB3 was observed; however, an inlet pipeline to IR21MH2 was not observed. A pipeline tracer video inspection was performed by Subtronic Corporation on March 26, 2010 to evaluate where the outlet pipeline in IR21CB3 leads, as described in Section 3.3.6. Additionally, a pipeline connection between IR21CB3 and the CB immediately upgradient of IR21CB3 on the west side of Building 386 (Figure 3-1) was not observed. The storm sewer Navy Quad maps for the site show a connection between these two CBs; however, an inlet pipeline in IR21CB3 from the upgradient direction was not observed during the site reconnaissance. Figure 3-1 show the observed configuration of these pipelines based on field observations.
- Lateral pipeline connections were observed in IR21MH3, IR21MH4, and IR21MH5. These lateral pipelines were also noted during the CCTV video inspections (discussed in Section 3.3.1 and 3.3.7). Figure 3-1 show the observed configuration of these pipelines based on field observations.
- IR21CB2 has one outlet pipeline that connects to IR21CB1. There is no inlet pipeline in IR21CB2, as shown in Figure 3-1.
- Two 1-inch-diameter electrical conduit pipes were found passing through the top of IR21MH1, as shown in Figure 3-1. Because they were passing through the top of the MH, cleaning activities could proceed at the bottom of IR21MH1 without removing the electrical conduit pipes.

### 3.3.3 Stormwater Drainage around the IR21/Buildings 386/388/390 Area

This section discusses stormwater drainage through the storm sewer system near the IR21/Buildings 386/388/390 Area and is based on current understanding of site conditions. Stormwater that does not infiltrate into the subsurface enters one of the CBs or MHs surrounding the building. The stormwater is then carried downgradient through the storm sewer pipelines located along the north, south, and east sides of the combined Buildings 386/388/390, under Railroad Avenue in the direction of Mare Island Strait, as depicted in Figure 3-1.

As mentioned in Section 3.3.2, stormwater collected in IR21CB2 flows downgradient to IR21CB1, then downgradient across Railroad Avenue in the direction of Mare Island Strait. Additionally, stormwater entering IR21CB3 appears to be isolated due to an obstruction. As mentioned in Section 2.2.1, the storm sewer pipeline segments between IR21MH1 and IR21CB1 and between IR21CB1 and IR21CB2 were investigated because these pipelines appear to form a junction at the southeast corner of the combined Buildings 386/388/390 that appears to capture the majority of the stormwater flow around Buildings 386/388/390. The apparent direction of stormwater flow in the storm sewer pipelines, based on field observations, is shown in Figure 3-1.

### 3.3.4 Storm Sewer System Cleaning Activities

KM Industrial mobilized to the site on March 23, 2009 to perform the cleaning activities. The cleaning activities included vacuum removal of accumulated sediment and water from three CBs (IR21CB1, IR21CB2, and IR21CB3) and four MHs (IR21MH2, IR21MH3, IR21MH4, and IR21MH5) prior to flushing/rinsing the pipeline segments. Following the removal of sediments and water, the CBs/MHs were pressure washed. Storm sewer pipeline segments between IR21CB1 and IR21CB2, IR21CB1 and IR21MH5, and IR21MH2 and IR21MH4, consisting of approximately 600 lineal feet of pipeline, were flushed/rinsed until few or no solids were visible in the rinse water. Figure 3-1 shows the location of the storm sewer CBs/MHs and pipeline segments.

The storm sewer pipeline segments were flushed/rinsed using a combination of a vacuum and high-pressure washer truck. The pressure washer truck supplied water to a nozzle that propelled itself through the lateral sewer. Upon retrieving the nozzle under water pressure, accumulated material in the pipeline was forced loose and backflushed to the CB or MH where it was vacuumed and removed. Pneumatic plugs were used to plug the lateral pipeline connections on the storm sewer pipeline so that water would not be flushed into other pipeline segments. Additionally, pneumatic plugs were used to plug IR21MH4 and IR21MH5 so that water would not be flushed onto underlying soils located beneath the broken pipeline segment between IR21MH4 and IR21MH5.

Approximately 2-3 tons of sediment and waste solids were removed and disposed of offsite at Clean Harbors disposal facility. In addition, approximately 7,500 gallons of waste water were collected as part of the cleaning activities. The waste sediments and water were disposed of as discussed in Section 3.6 of this report.

### 3.3.5 Sample Collection

Prior to cleaning activities, ICS collected a water sample from the vacuum and high-pressure washer truck and analyzed it for lead, TPH-diesel, and TPH-motor-oil to determine their concentrations in the source water. The concentrations of lead and TPH-diesel in this water sample were 20 µg/L and 360 µg/L, respectively. TPH-motor-oil was not detected above the laboratory reporting limit (100 µg/L) in the source water sample. The laboratory analytical report for the source water sample is included in Appendix A.

Once few or no solids were observed in the rinse water in each of the three flushed pipeline segments, grab rinsate water samples from the pipeline segments between IR21CB1 and IR21CB2 (sample IR21SSCB1CB2 from IR21CB2), IR21CB1 and IR21MH5 (sample

IR21SSCB1MH5 from IR21MH5), and IR21 MH2 and IR21MH4 (sample IR21SSMH4MH2 from IR21MH4) were collected from the nearest CB or MH (shown in Figure 3-1) and were submitted for laboratory analysis of lead using USEPA Method 6010B and for analysis of TPH-diesel and TPH-motor-oil using USEPA Method 8015B. The results of the rinsate water samples are discussed in Section 3.4.

### 3.3.6 Pipeline Tracer Video Inspection at CB3

Cleaning activities concluded on March 26, 2010, and KM Industrial demobilized from the site. On March 26, 2010, Subtronic Corporation conducted a video pipeline tracer inspection at IR21CB3 located on the west side of Building 386. The camera was inserted into the 4-inch-diameter pipeline exiting the southern portion of IR21CB3 to determine where the pipe leads. The camera was underwater beginning at approximately 2 feet, and an obstruction was encountered at approximately 40 feet into the pipeline, shown in Figure 3-1. The camera was located with a handheld pipe locator at ground surface, which detected the camera at the obstruction. Based on the handheld pipe locator, the camera was detected at a location approximately 30 feet east of the manhole (IR21MH2) and adjacent to the 8-inch polyvinyl chloride storm sewer pipeline segment between IR21MH2 and IR21CB1, shown in Figure 3-1. This observed configuration is in disagreement with the storm sewer Navy Quad maps that show a storm sewer pipeline connecting IR21CB3 and IR21MH2. Additionally, a lateral pipeline exiting the north portion of MH3 was observed. This pipeline appears to lead into Building 386; however, the pipe was also fully obstructed and could not be located or videoed. The observed pipeline configuration at IR21CB3, IR21MH2, and IR21MH3 is shown in Figure 3-1.

### 3.3.7 Post-cleaning CCTV Video Inspection

As discussed above, a CCTV video inspection was performed after the completion of the storm sewer system cleaning activities at the request of the VSFCDD (VSFCDD 2009) to document the conditions of the pipelines. The post-cleaning CCTV video inspection was conducted on March 31, 2010 by Subtronic Corporation. The VSFCDD was present during the post-cleaning CCTV video inspection to observe the condition of the storm sewer pipelines. Based on the observations recorded during the pre- and post-cleaning CCTV video inspections, the storm sewer system cleaning activities did not impact the existing integrity of the pipelines. In a letter to the VSFCDD dated June 28, 2010 (CH2M HILL 2010), CH2M HILL documented the cleaning activities at the storm sewer pipelines near the IR21/Buildings 386/388/390.

## 3.4 Results of Cleaning Activities

Table 3-1 provides the analytical results for the rinsate water samples compared to their respective Tier 2 screening levels for groundwater at sites located greater than 300 feet from a sensitive receptor (e.g. Mare Island Strait) (CH2M HILL 2009h). Figure 3-1 also shows these results along with the approximate location of the sample collection. As shown in Table 3-1 and Figure 3-1, the concentrations of lead, TPH-diesel, and TPH-motor-oil in each of the rinsate water samples were below their applicable Tier 2 screening levels.

**TABLE 3-1**

Analytical Results for Rinsate Water Samples Following Storm Sewer System Cleaning Activities near the  
IR21/Buildings 386/388/390 Area

*Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building  
678 AL#04, and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island Vallejo, California*

Parameter	Screening Criteria <sup>a</sup> (µg/L)	Pipeline Segment CB1-CB2 IR21SSCB1CB2 (µg/L)	Pipeline Segment CB1-MH5 IR21SSCB1MH5 (µg/L)	Pipeline Segment MH4-MH2 IR21SSMH4MH2 (µg/L)
TPH-diesel	5,000	150J	590J	360J
TPH-motor-oil	5,000	240J	540	860
Lead	50,000	3.7	450	1,000

<sup>a</sup>Tier 2 Screening Level (for sites >300 ft from sensitive receptors).

### 3.5 Evaluation of Soil and Groundwater Along Broken Pipeline Segment (MH4 to MH5)

As described in Section 3.3.1, the bottom of the storm sewer pipeline between IR21MH4 and IR21MH5 appeared to be missing during the CCTV video inspection on May 19, 2009 and March 31, 2009. An evaluation of existing sample data within a 25-foot radius of this broken pipeline segment and the nearest downgradient groundwater monitoring wells was performed to assess potential impacts to underlying soil and groundwater due to releases, if any, from this storm sewer pipeline segment. Figures 3-2 and 3-3 show the existing soil and groundwater data for TPH-diesel, TPH-motor-oil, lead, and PCBs on or near this broken pipeline segment. Concentrations of TPH-diesel and TPH-motor-oil in soil samples were compared to Tier 2 screening levels (CH2M HILL 2009h), and concentrations of lead and PCBs were compared to the USEPA industrial RSLs (USEPA 2009b). Concentrations of TPH-diesel, TPH-motor-oil, lead, and PCBs in groundwater samples were compared to Tier 2 screening levels (CH2M HILL 2009h).

As shown in Figure 3-2, one soil sample (B382GB0100 at 5.5 feet bgs) located approximately 5 to 10 feet from the broken pipeline segment contains concentrations of TPH-diesel (7,300 mg/kg) and TPH-motor oil (8,200 mg/kg) that exceed the Tier 2 screening levels. The remaining soil samples collected from locations on or adjacent to the broken pipeline segment are below Tier 2 screening levels. Based on the boring log for soil sample B382GB0100 (CH2M HILL 2009g), three borings were hand-augered at this location. Oil was observed at 5.5 feet bgs within cracks and laminations in the surrounding soil but was not in the soil matrix. These observations are consistent with the conceptual site model that was presented in the *Final Feasibility Study/Removal Action Work Plan for IR21 and the Buildings 386/388/390 Area, Investigation Area C2, Lennar Mare Island, Vallejo, California* (CH2M HILL 2009g). Site conditions suggest the TPH found in this soil sample was not released from the storm sewer pipeline. The TPH-motor-oil concentration (5,200Y [Y=fuel pattern (TPH only)] mg/kg) in the soil sample collected from downgradient boring B382GB002 exceeds the Tier 2 screening level. Soil sample locations B382GB0100 and B382GB002 will be addressed by the TPH Notification that will be included as part of the

site-specific LUC for the IR21/Building 386/388/390 Area. Concentrations of TPH-diesel and TPH-motor-oil in soil samples collected from the other soil and groundwater locations near the storm sewer pipeline do not exceed Tier 2 screening levels. One grab groundwater sample from boring B382GB001 contained concentrations of TPH-diesel (54,000,000Y  $\mu\text{g/L}$ ) and TPH-motor-oil (150,000,000Y  $\mu\text{g/L}$ ) that exceed the Tier 2 screening levels. However, TPH-diesel and TPH-motor-oil did not exceed Tier 2 screening levels in downgradient monitoring wells IR21MW0106 and B388W01, which were sampled intermittently between 1999 and 2007 and quarterly between February 2007 and April 2009. Therefore, TPH impacts to groundwater appear to be limited to the area around these two borings. These observations are consistent with the IR21/Buildings 386/388/390 Area, as discussed in the *Final Feasibility Study/Removal Action Work Plan for IR21 and the Buildings 386/388/390 Area, Investigation Area C2, Lennar Mare Island, Vallejo, California* (CH2M HILL 2009g).

As shown in Figure 3-3, concentrations of Aroclor-1254 (5J mg/kg) in a soil sample collected from sample location B390GB007 at 3 feet bgs exceeds the USEPA industrial RSL of 0.74 mg/kg (USEPA 2009b). Concentrations of lead in soil and groundwater and PCBs in groundwater in the remaining samples did not exceed screening levels. Because the soil sample B390GB016 is located approximately 25 feet north of the storm sewer pipeline, it does appear that PCBs in this sample location are not related to a release from the broken storm sewer pipeline segment between MH4 to MH5, if any. Based on the results described above, no further action is proposed for soil and groundwater at the storm sewer system near the IR21/Buildings 386/388/390 Area. A TPH notification will be included in the IA C2 Commercial/Industrial LUC, which will identify soil sample locations where concentrations of TPH-related constituents have been detected at concentrations above the odor/nuisance screening levels.

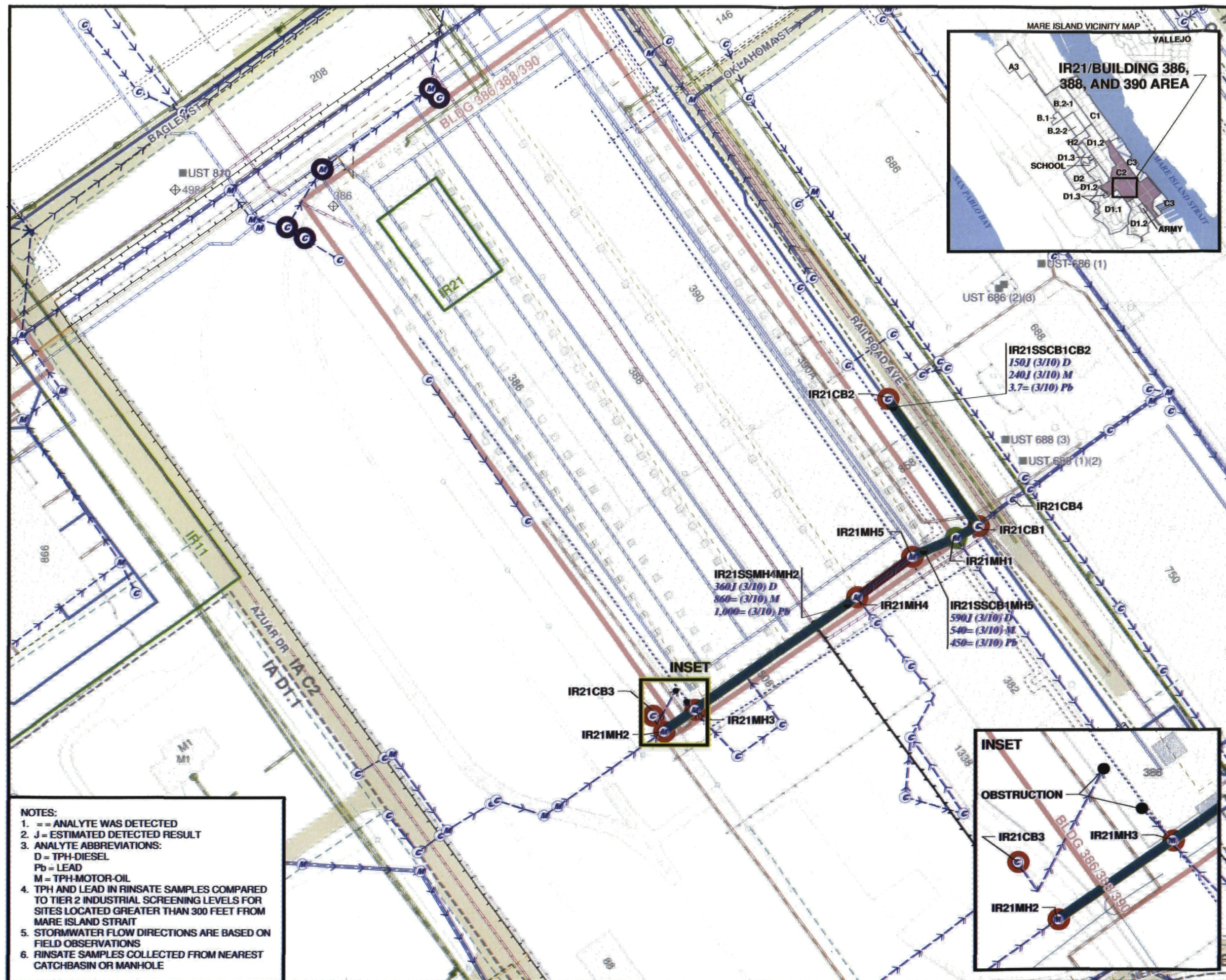
### 3.6 Waste Management

Sediments and solids removed from the CB/MH structures were containerized for disposal in accordance with appropriate state and federal requirements.

The accumulated water (approximately 7,500 gallons) removed from the CBs/MHs and the rinsate water generated from the flushing/rinsing of the pipeline segments were containerized in a fractionalization tanks and were analyzed for VSFCDD sanitary sewer discharge criteria. The analytical results of these samples met the VSFCDD discharge criteria and a permit to discharge the water into the sanitary sewer was approved by VSFCDD on April 7, 2010. A copy of the rinsate wastewater analytical results and the permit are included in Appendix C.

The accumulated sediment and solids removed from the CBs/MHs and pipeline segments (approximately 2-3 tons) were contained in a roll-off bin and were analyzed for Clean Harbors disposal facility criteria. A copy of the waste profile and disposal manifest is included in Appendix D.





**LEGEND**

- GRAB SAMPLE
- ◇ UNDERGROUND STORAGE TANK UNKNOWN
- UNDERGROUND STORAGE TANK
- ⊙ STORM SEWER CATCHBASIN
- ⊙ STORM SEWER MANHOLE
- CLEANED IN 2009
- NOT VISIBLE DURING 2009 SITE VISIT
- 1-INCH DIAMETER ELECTRICAL CONDUIT OBSERVED
- > STORMWATER FLOW DIRECTION
- STORMWATER BACKBONE
- STORMWATER SERVICE LINE
- UNDERGROUND ELECTRICAL UTILITY
- INDUSTRIAL WASTEWATER PIPELINE
- BACKBONE SEWER PIPELINE
- SEWER SERVICE LINE
- GAS PIPELINE
- OTHER WATER PIPELINE
- AIR PIPELINE
- COMPRESSED AIR PIPELINE
- EXISTING DREDGE PIPELINE
- EXISTING FRESHWATER PIPELINE
- ABANDONED FUEL OIL PIPELINE
- FLUSHED FUEL OIL PIPELINE
- FUEL OIL PIPELINES NOT FOUND
- REMOVED FUEL OIL PIPELINES
- UNKNOWN FUEL OIL PIPELINE
- SALTWATER PIPELINE
- STEAM PIPELINE
- FENCE
- RAILROAD
- INVESTIGATION AREA
- SECTION OF BOTTOM OF STORM WATER PIPELINE MISSING
- STORMWATER PIPELINE FLUSHED/RINSED
- GROUP I SITE
- GROUP II, III SITE
- BUILDING FOOTINGS
- STRUCTURE
- ROAD

**SAMPLE LOCATION** — IR14VB219

**RINSATE CONCENTRATION (µg/L)** — 86Y (3/10)

**SAMPLE DATE**

0 110 Feet

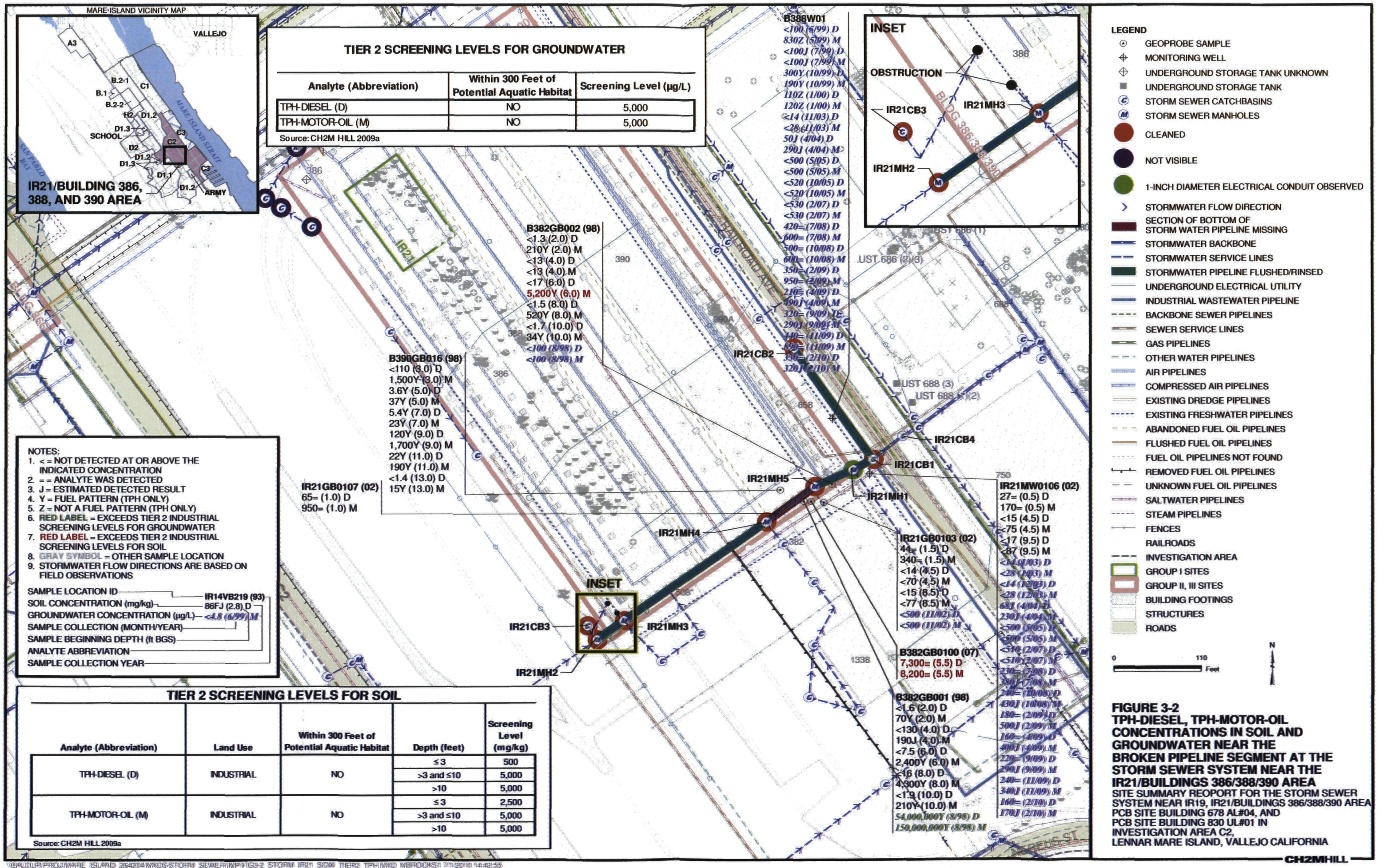
N

**NOTES:**

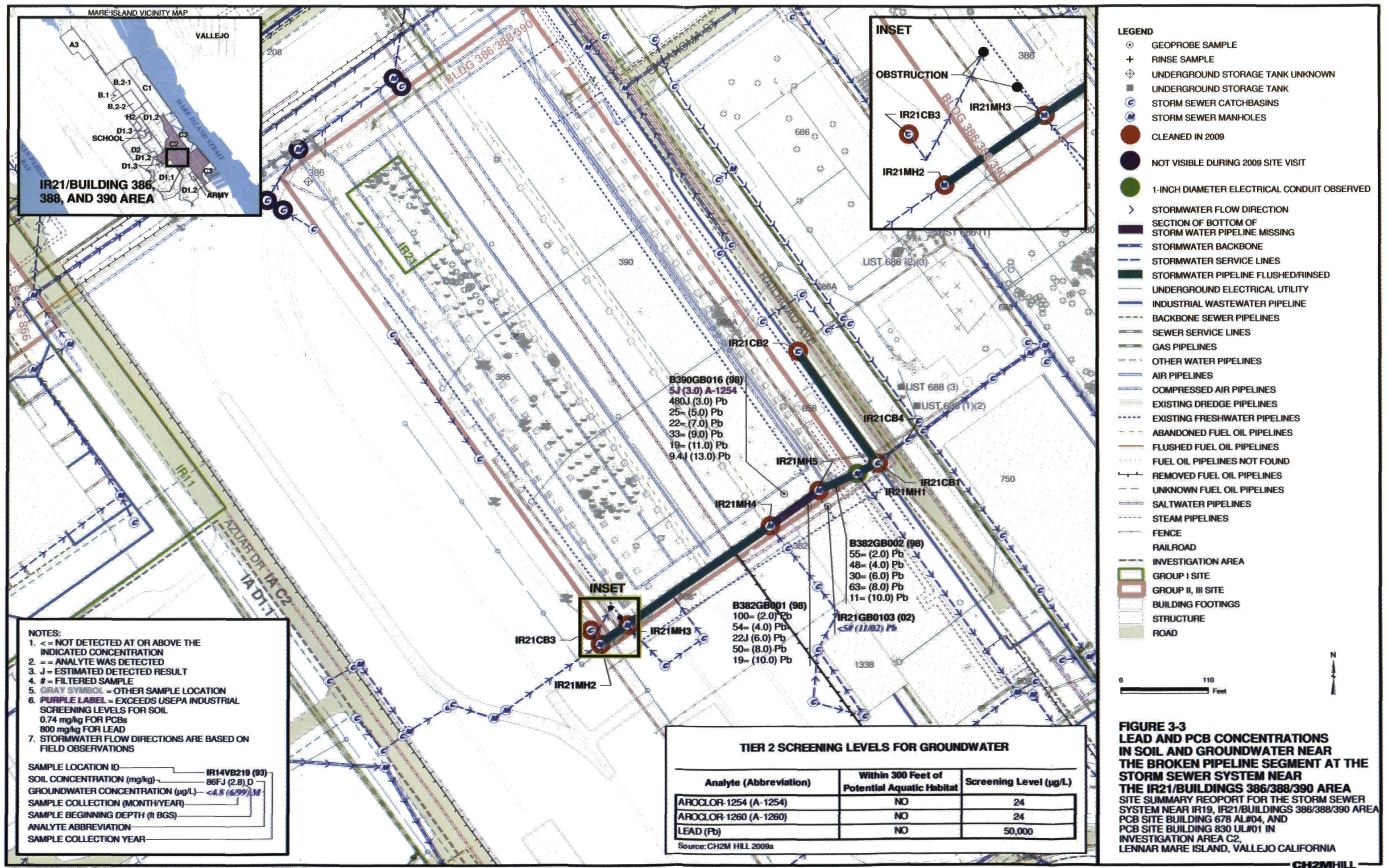
1. == ANALYTE WAS DETECTED
2. J = ESTIMATED DETECTED RESULT
3. ANALYTE ABBREVIATIONS:  
D = TPH-DIESEL  
Pb = LEAD  
M = TPH-MOTOR-OIL
4. TPH AND LEAD IN RINSATE SAMPLES COMPARED TO TIER 2 INDUSTRIAL SCREENING LEVELS FOR SITES LOCATED GREATER THAN 300 FEET FROM MARE ISLAND STRAIT
5. STORMWATER FLOW DIRECTIONS ARE BASED ON FIELD OBSERVATIONS
6. RINSATE SAMPLES COLLECTED FROM NEAREST CATCHBASIN OR MANHOLE

**FIGURE 3-1**  
**LEAD, TPH-DIESEL AND TPH-MOTOR-OIL CONCENTRATIONS IN RINSATE SAMPLES AT THE STORM SEWER PIPELINE NEAR THE IR21/BUILDINGS 386/388/390 AREA**  
SITE SUMMARY REPORT FOR THE STORM SEWER SYSTEM NEAR IR19, IR21/BUILDINGS 386/388/390 AREA  
PCB SITE BUILDING 678 AL#04, AND PCB SITE BUILDING 830 UL#01 IN INVESTIGATION AREA C2, LENNAR MARE ISLAND, VALLEJO CALIFORNIA











## 4.0 Conclusions and Criteria for Obtaining Site Closure

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### 4.1 Conclusions

The storm sewer system sampling activities was initiated in March 2009 and addressed storm sewer CBs and/or MHs located downgradient of the following sites in IA C2:

- IR19
- IR21/Buildings 386/388/390 Area
- PCB Site Building 678 AL#04
- PCB Site Building 830 UL#01

The storm sewer system investigation consisted of an initial round of sediment or concrete chip sampling and analysis for CBs and MHs immediately downgradient of these four sites. If sediment was present, a composite sediment sample was collected from the accumulated sediments in the bottom of the CB or MH and was submitted for analysis of the known COCs encountered at the immediately upgradient site. A concrete chip sample was collected from the bottom of the CBs at sites impacted by PCBs only. Because the analytical results of the first round of sampling exceeded screening levels, step-out sampling to CBs/MHs located along the storm sewer pipeline was performed to evaluate the concentrations of COCs downgradient in the pipeline at IR21/Buildings 386/388/390 Area.

The analytical results for sediment and concrete chip samples collected from storm sewer CBs/MHs near IR19, PCB Site Building 678 AL#04, and PCB Site Building 830 UL#01 were below their respective screening levels. DTSC and Water Board verbally approved no additional investigation/remedial activities for the storm sewer system near these sites during an agency meeting on April 28, 2009. DTSC provided written approval in an email dated December 9, 2009 (DTSC 2009c).

CH2M HILL conducted storm sewer system cleaning activities near the IR21/Buildings 386/388/390 Area in March 2010. The cleaning activities consisted of removing impacted sediment and water from storm sewer CBs and MHs, followed by flushing/rinsing the pipeline segments that connect these structures. Following the completion of these cleaning activities, rinsate water samples were collected from the flushed/rinsed pipeline segments and were analyzed for lead, TPH-diesel, and TPH-motor-oil. The concentrations of these constituents in the rinsate samples were all below their applicable Tier 2 screening levels for groundwater at commercial/industrial sites. Additionally, soil and groundwater samples collected from locations above or near the broken storm sewer pipeline segment (MH4 to MH5) (shown in Figures 3-2 and 3-3) were analyzed for TPH-diesel, TPH-motor-oil, PCBs, and lead. On the basis of these results, there is no evidence of impacts from releases, if any, from the storm sewer; therefore, additional investigation/remedial activities are not proposed for the IR21/Buildings 386/388/390 Area.

## 4.2 Criteria for No Further Action

Analytical results in sediment, concrete chip and rinsate water samples collected from storm sewer CBs/MHs or pipelines near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04, and PCB Site Building 830 UL#01 meet their applicable screening criteria. Therefore, CH2M HILL requests DTSC concurrence that additional investigation/remedial activities for the storm sewer system near these sites in IA C2 are not necessary.

## 5.0 References

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- California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). 2003a. Letter. "Lennar Mare Island, Final Site ID Technical Memorandum for Investigation Area B, dated July 16, 2002." January 15.
- \_\_\_\_\_. 2003b. Letter. "Lennar Mare Island, Final Site ID Technical Memorandum for Investigation Area C1, Dated May 2002." February 20.
- \_\_\_\_\_. 2003c. Letter. "Lennar Mare Island, Final Site ID Technical Memorandum for Investigation Area C2, Revised March 14, 2003." May 20.
- \_\_\_\_\_. 2003d. Letter. "Lennar Mare Island, Final Site ID Technical Memorandum for Investigation Area C3, Dated May 24, 2002." January 17.
- \_\_\_\_\_. 2003e. Letter. Lennar Mare Island, Final Site ID Technical Memorandum for Investigation Area D1, Dated April 17, 2003". November 6.
- \_\_\_\_\_. 2003f. Letter. "Lennar Mare Island, Final Site ID Technical Memorandum for Investigation Area H2, Dated May 9, 2002." January 10.
- \_\_\_\_\_. 2007a. Letter. "Lennar Mare Island, Draft Site Characterization and Cleanup Action Report for PCB Site at Building 516 and 516A in Investigation Area C3, dated May 17, 2007." July 18.
- \_\_\_\_\_. 2007b. Letter. "Lennar Mare Island, Draft Removal Action Work Plan for IR21, Investigation Area C2, May 2006." January 4.
- \_\_\_\_\_. 2008. Letter. "Lennar Mare Island, Site Characterization and Cleanup Summary Report for PCB Site At Building 535 AL#01 and AL#02 in Investigation Area B.2, Dated February 13, 2008." March 25.
- \_\_\_\_\_. 2009a. Letter. "Lennar Mare Island Response To DTSC Comments for Storm Sewer System at PCB Site Building 516 AL#01, Investigation Area C3, Dated February 26, 2009." April 22.
- \_\_\_\_\_. 2009b. Telephone Conversation between Henry Chui/DTSC and Jennifer Low/CH2M HILL. Discussion of Historical Detection of PCBs in Sediment and Water from Manhole D1\_M13. January 14.
- \_\_\_\_\_. 2009c. Email from Henry Chui/DTSC to Paula Bolio/CH2M HILL. "RE: Storm Sewer SAP Approach." December 9.
- California Regional Water Quality Control Board, San Francisco Bay Region (Water Board). 2003a. Letter. "RWQCB Comments on the Final Investigation Area C2 Site Identification Technical Memorandum, Mare Island, Solano County (October 15, 2002)." February 13.

- \_\_\_\_\_. 2003b. Letter. "Approval of Final Investigation Area C3 Site Identification Technical Memorandum, Mare Island, Vallejo, California (May 24, 2002)." January 8.
- \_\_\_\_\_. 2003c. Letter. "Approval of Final Investigation Area D1 Site Identification Technical Memorandum, Mare Island, Vallejo, Solano Country (April 17, 2003)." November 4.
- \_\_\_\_\_. 2003d. Letter. "Approval of Final Investigation Area H2 Site Identification Technical Memorandum, Mare Island, Vallejo, California (May 9, 2002)." January 8.
- \_\_\_\_\_. 2009. Letter. "Final Investigation Area C1 Remedial Investigation/Feasibility Study Report, Lennar Mare Island, Vallejo, California, dated August 17, 2006, Response to DTSC Comments on the Final Investigation Area C1 RI/FS Report, dated September 17, 2008, Response to February 20, 2008 Letter Regarding LMI IA C1 NFA Areas, dated September 18, 2008." February 4.
- CH2M HILL. 2002a. *Final Investigation Area B Site Identification Technical Memorandum, Mare Island, Vallejo, California.* July.
- \_\_\_\_\_. 2002b. *Final Investigation Area C1 Site Identification Technical Memorandum, Mare Island, Vallejo, California.* May.
- \_\_\_\_\_. 2002c. *Final Investigation Area C2 Site Identification Technical Memorandum, Mare Island, Vallejo, California.* October.
- \_\_\_\_\_. 2002d. *Final Investigation Area C3 Site Identification Technical Memorandum, Mare Island, Vallejo, California.* May.
- \_\_\_\_\_. 2002e. *Final Investigation Area H2 Site Identification Technical Memorandum, Mare Island, Vallejo, California.* April.
- \_\_\_\_\_. 2002f. Meeting Summary. "Lennar Regulatory Agency Meeting - December 17, 2002." December 17.
- \_\_\_\_\_. 2003. *Final Investigation Area D1 Site Identification Technical Memorandum, Lennar Mare Island, Vallejo, California.* April.
- \_\_\_\_\_. 2006a. *Final Investigation Area C1 Remedial Investigation/Feasibility Study Report, Lennar Mare Island, Vallejo, California.* August.
- \_\_\_\_\_. 2006b. *Draft Removal Action Work Plan for the IR21 Area, Lennar Mare Island, Vallejo, California.* May 4.
- \_\_\_\_\_. 2007. *Site Characterization and Cleanup Action Summary Report for Polychlorinated Biphenyl Sites Building 516 and 516A Investigation Area C3, Lennar Mare Island, Vallejo, California.* May 17.
- \_\_\_\_\_. 2008. *Site Characterization and Cleanup Summary Report for PCB Site At Building 535 AL#01 and AL#02 in Investigation Area B.2, Lennar Mare Island, Vallejo, California.* February 13.
- \_\_\_\_\_. 2009a. Letter. "Response to Department of Toxic Substances Control Comments on the Site Characterization and Cleanup Action Summary Report for the Storm

- Sewer System near Polychlorinated Biphenyl Site Building 516 AL#01, Investigation Area C3, Lennar Mare Island, Vallejo, California." February 26.
- \_\_\_\_\_. 2009b. Letter. "Addendum to the Cleanup Plan for Polychlorinated Biphenyl Site Building 535 AL#01 in Investigation Area B.2, Lennar Mare Island, Vallejo, California." March 4.
- \_\_\_\_\_. 2009c. Letter. "Addendum to the Notification Regarding Self-implementing, Onsite Cleanup and Disposal of Polychlorinated Biphenyl Remediation Waste at Polychlorinated Biphenyl Site Building 535 AL#01 in Investigation Area B.2." March 4.
- \_\_\_\_\_. 2009d. *Polychlorinated Biphenyl Site Building 830 UL#01 (Electric Substation 22) in Investigation Area C2, Where No Further Action Is Required under the Department of Toxic Substances Control Consent Agreement.* Prepared for DTSC. July 28.
- \_\_\_\_\_. 2009e. *Polychlorinated Biphenyl Site Building 830 UL#01 (Electric Substation 22) in Investigation Area C2, Where No Further Action Is Required under the United States Environmental Protection Agency Consent Agreement and Final Order.* Prepared for USEPA. July 28.
- \_\_\_\_\_. 2009f. Agency Presentation. "Storm Sewer Catch Basins and Manholes in Open Investigation Areas." February 10.
- \_\_\_\_\_. 2009g. *Final Feasibility Study/Removal Action Work Plan for IR21 and the Buildings 386/388/390 Area, Investigation Area C2, Lennar Mare Island, Vallejo, California.* September.
- \_\_\_\_\_. 2009h. *Tier 2 Risk Assessment Approach for Water Board Sites in the Eastern Early Transfer Parcel, Lennar Mare Island, Vallejo, California.* Technical Memorandum. April 9.
- \_\_\_\_\_. 2009i. Agency Presentation. "Storm Sewer Catch Basins and Manholes Investigation Results and Path Forward." April 28.
- \_\_\_\_\_. 2009j. Letter. "Proposed Storm Sewer Pipeline and Catch Basin/Manhole Cleaning, Vicinity of Buildings 382, 386, 388, and 390 and Railroad Avenue, Mare Island, Vallejo, California." November 13.
- \_\_\_\_\_. 2010. Letter. "Storm Sewer Pipeline and Catch Basins/Manholes Cleaning near Buildings 382, 386, 388 and 390, Lennar Mare Island, Vallejo, California." June 28.
- \_\_\_\_\_. Pending(a). *Addendum to the Site Characterization and Cleanup Action Summary Report for Polychlorinated Biphenyl Sites Building 535 AL#01, Investigation Area B.2, Lennar Mare Island, Vallejo, California.*
- \_\_\_\_\_. Pending(b). *Site Characterization and Cleanup Action Summary Report for Polychlorinated Biphenyl Site Building 678 AL#04, Investigation Area C2, Lennar Mare Island, Vallejo, California.*
- IT Corporation/Martin Marietta, Oak Ridge, Tennessee. 2002. *Final Post-Construction Report Storm Drain Cleaning, Former Mare Island Naval Shipyard Vallejo, California.* February.

Lennar Mare Island, the City of Vallejo, and the State of California, Environmental Protection Agency Department of Toxic Substances Control. 2001. *Consent Agreement between Lennar Mare Island, the City of Vallejo, and the State of California, California Environmental Protection Agency Department of Toxic Substances Control*. April 16.

United States Environmental Protection Agency (USEPA). 2009a. Letter. "Site Characterization and Cleanup Action Summary Reports for Polychlorinated Biphenyl Sites 516 and 516A in Investigation Area C3, Eastern Early Transfer Parcel, Lennar Mare Island, Vallejo, California, and Reports dated May 17, 2007, October 3, 2007, and February 26, 2009." August 31.

\_\_\_\_\_. 2009b. *Regional Screening Levels for Chemical Contaminants at Superfund Sites*. December 5.

Vallejo Sanitation and Flood Control District (VSFCD). 2009. Email from Mike Monahan/VSFCD to Mike Godwin/CH2M HILL. "Re: SD Cleaning near B382, 386, 388, 390." December 10.

**Appendix A**  
**Analytical Results for Sediment, Concrete Chip,**  
**and/or Rinsate Water Samples Collected from**  
**the Storm Sewer System near IR19,**  
**IR21/Buildings 386/388/390 Area,**  
**PCB Site Building 678 AL#04, and**  
**PCB Site Building 830 UL#01**

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# Appendix A

2009 Analytical Results for Sediment, Concrete Chip and/or Rinsate Water Samples collected from the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01

Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California

Location of Sample	Sample Identifier	QA/QC Type	Value mg/kg	Flag <sup>a</sup>	Date and Time of Sample	Sample Depths Beginning (feet bgs)	Sample Depths Ending (feet bgs)	Removed?	Type of Sample	Source of Measurement
<b>PCB Compounds</b>										
<b>Analyte</b>	<b>CAS Number</b>									
AROCLOR-1016	12674-11-2									
B678GB1CS0101	B678GB1CS0101-C3	ORIG	2.1E-03	U	03/12/09 14:40	3.0	3.5	N	Concrete Chip	Laboratory
B830CB1CS0101	B830CB1CS0101-C3.5	ORIG	2.1E-03	U	03/13/09 14:25	3.5	4.0	N	Concrete Chip	Laboratory
AROCLOR-1221	11104-28-2									
B678GB1CS0101	B678GB1CS0101-C3	ORIG	4.2E-03	U	03/12/09 14:40	3.0	3.5	N	Concrete Chip	Laboratory
B830CB1CS0101	B830CB1CS0101-C3.5	ORIG	4.3E-03	U	03/13/09 14:25	3.5	4.0	N	Concrete Chip	Laboratory
AROCLOR-1232	11141-16-5									
B678GB1CS0101	B678GB1CS0101-C3	ORIG	2.7E-03	U	03/12/09 14:40	3.0	3.5	N	Concrete Chip	Laboratory
B830CB1CS0101	B830CB1CS0101-C3.5	ORIG	2.8E-03	U	03/13/09 14:25	3.5	4.0	N	Concrete Chip	Laboratory
AROCLOR-1242	53469-21-9									
B678GB1CS0101	B678GB1CS0101-C3	ORIG	8.3E-04	U	03/12/09 14:40	3.0	3.5	N	Concrete Chip	Laboratory
B830CB1CS0101	B830CB1CS0101-C3.5	ORIG	8.5E-04	U	03/13/09 14:25	3.5	4.0	N	Concrete Chip	Laboratory
AROCLOR-1248	12672-29-6									
B678GB1CS0101	B678GB1CS0101-C3	ORIG	8.7E-04	U	03/12/09 14:40	3.0	3.5	N	Concrete Chip	Laboratory
B830CB1CS0101	B830CB1CS0101-C3.5	ORIG	8.9E-04	U	03/13/09 14:25	3.5	4.0	N	Concrete Chip	Laboratory
AROCLOR-1254	11097-69-1									
B678GB1CS0101	B678GB1CS0101-C3	ORIG	2.1E-03	U	03/12/09 14:40	3.0	3.5	N	Concrete Chip	Laboratory
B830CB1CS0101	B830CB1CS0101-C3.5	ORIG	2.1E-03	U	03/13/09 14:25	3.5	4.0	N	Concrete Chip	Laboratory
AROCLOR-1260	11096-82-5									
B678GB1CS0101	B678GB1CS0101-C3	ORIG	3.3E-02	=	03/12/09 14:40	3.0	3.5	N	Concrete Chip	Laboratory
B830CB1CS0101	B830CB1CS0101-C3.5	ORIG	5.5E-02	J	03/13/09 14:25	3.5	4.0	N	Concrete Chip	Laboratory
AROCLOR-1262	37324-23-5									
B678GB1CS0101	B678GB1CS0101-C3	ORIG	1.3E-02	U	03/12/09 14:40	3.0	3.5	N	Concrete Chip	Laboratory
B830CB1CS0101	B830CB1CS0101-C3.5	ORIG	1.3E-02	U	03/13/09 14:25	3.5	4.0	N	Concrete Chip	Laboratory

NOTE: <sup>a</sup> FLAGS

= Detected Result  
J Estimated Detected Result  
U Nondetect Result  
UJ Estimated Nondetect Result

Rinsate samples collected from nearest catch basin or manhole.

# Appendix A

2009 Analytical Results for Sediment, Concrete Chip and/or Rinsate Water Samples collected from the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01

Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California

Location of Sample	Sample Identifier	QA/QC Type	Value mg/kg	Flag <sup>a</sup>	Date and Time of Sample	Sample Depths Beginning (feet bgs)	Sample Depths Ending (feet bgs)	Removed?	Type of Sample	Source of Measurement
<b>PCB Compounds</b>										
<b>Analyte</b>	<b>CAS Number</b>									
AROCLOR-1268	11100-14-4									
B678GB1CS0101	B678GB1CS0101-C3	ORIG	1.3E-02	U	03/12/09 14:40	3.0	3.5	N	Concrete Chip	Laboratory
B830CB1CS0101	B830CB1CS0101-C3.5	ORIG	1.3E-02	U	03/13/09 14:25	3.5	4.0	N	Concrete Chip	Laboratory
TOTAL PCB CALCULATION	TOTAL PCBs									
B678GB1CS0101	B678GB1CS0101-C3	ORIG	3.3E-02	=	03/12/09 14:40	3.0	3.5	N	Concrete Chip	Laboratory
B830CB1CS0101	B830CB1CS0101-C3.5	ORIG	5.5E-02	J	03/13/09 14:25	3.5	4.0	N	Concrete Chip	Laboratory

NOTE:

Rinsate samples collected from nearest catch basin or manhole.

<sup>a</sup> FLAGS

= Detected Result  
J Estimated Detected Result  
U Nondetect Result  
UJ Estimated Nondetect Result



# Appendix A

2009 Analytical Results for Sediment, Concrete Chip and/or Rinsate Water Samples collected from the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01

Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California

Location of Sample	Sample Identifier	QA/QC Type	Value mg/kg	Flag <sup>a</sup>	Date and Time of Sample	Sample Depths Beginning (feet bgs)	Sample Depths Ending (feet bgs)	Removed?	Type of Sample	Source of Measurement
<b>Petroleum Hydrocarbon Compounds</b>										
<b>Analyte</b> DIESEL	<b>CAS Number</b> DRO									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	6.1E+02	=	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory
IR21CB2SD0101	IR21CB2SD0101-S3	ORIG	7.8E+02	J	03/25/09 15:40	3.0	3.5	Y	Sediment Sample	Laboratory
IR21CB3SD0101	IR21CB3SD0101-S3.5	ORIG	4.4E+02	J	03/25/09 14:00	3.0	3.5	Y	Sediment Sample	Laboratory
IR21CB4SD0101	IR21CB4SD0101-SD6	ORIG	4.1E+02	J	05/01/09 09:00	6.0	6.5	Y	Sediment Sample	Laboratory
IR21MH2SD0101	IR21MH2SD0101-S4	ORIG	1.7E+02	J	03/25/09 13:50	3.0	3.5	Y	Sediment Sample	Laboratory
<b>MOTOR OIL</b>	<b>MRO</b>									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	1.4E+03	=	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory
IR21CB2SD0101	IR21CB2SD0101-S3	ORIG	3.5E+03	=	03/25/09 15:40	3.0	3.5	Y	Sediment Sample	Laboratory
IR21CB3SD0101	IR21CB3SD0101-S3.5	ORIG	3.0E+03	=	03/25/09 14:00	3.0	3.5	Y	Sediment Sample	Laboratory
IR21CB4SD0101	IR21CB4SD0101-SD6	ORIG	2.0E+03	=	05/01/09 09:00	6.0	6.5	Y	Sediment Sample	Laboratory
IR21MH2SD0101	IR21MH2SD0101-S4	ORIG	7.5E+02	=	03/25/09 13:50	3.0	3.5	Y	Sediment Sample	Laboratory

## Volatile Organic Compounds

<b>Analyte</b> 1,1,1,2-TETRACHLOROETHANE	<b>CAS Number</b> 630-20-6									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,1,1-TRICHLOROETHANE	71-55-6									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,1,2,2-TETRACHLOROETHANE	79-34-5									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,1,2-TRICHLOROETHANE	79-00-5									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory

NOTE: <sup>a</sup> FLAGS

- = Detected Result
  - J Estimated Detected Result
  - U Nondetect Result
  - UJ Estimated Nondetect Result
- Rinsate samples collected from nearest catch basin or manhole.

# Appendix A

2009 Analytical Results for Sediment, Concrete Chip and/or Rinsate Water Samples collected from the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01

Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California

Location of Sample	Sample Identifier	QA/QC Type	Value mg/kg	Flag <sup>a</sup>	Date and Time of Sample	Sample Depths Beginning (feet bgs)	Sample Depths Ending (feet bgs)	Removed?	Type of Sample	Source of Measurement
<b>Volatile Organic Compounds</b>										
<b>Analyte</b>	<b>CAS Number</b>									
1,1-DICHLOROETHANE	75-34-3									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,1-DICHLOROETHENE	75-35-4									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,2,3-TRICHLOROPROPANE	96-18-4									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,2,4-TRICHLOROBENZENE	120-82-1									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,2,4-TRIMETHYLBENZENE	95-63-6									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,2-DICHLOROBENZENE	95-50-1									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,2-DICHLOROETHANE	107-06-2									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,2-DICHLOROPROPANE	78-87-5									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,3,5-TRIMETHYLBENZENE	108-67-8									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
1,3-DICHLOROBENZENE	541-73-1									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory

NOTE:

Rinsate samples collected from nearest catch basin or manhole.

<sup>a</sup> FLAGS  
 = Detected Result  
 J Estimated Detected Result  
 U Nondetect Result  
 UJ Estimated Nondetect Result



# Appendix A

2009 Analytical Results for Sediment, Concrete Chip and/or Rinsate Water Samples collected from the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01

Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California

Location of Sample	Sample Identifier	QA/QC Type	Value mg/kg	Flag <sup>a</sup>	Date and Time of Sample	Sample Depths Beginning (feet bgs)	Sample Depths Ending (feet bgs)	Removed?	Type of Sample	Source of Measurement
<b>Volatile Organic Compounds</b>										
<b>Analyte</b>	<b>CAS Number</b>									
1,4-DICHLOROBENZENE	106-46-7									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
2-BUTANONE	78-93-3									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	4.5E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
2-CHLOROTOLUENE	95-49-8									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
4-METHYL-2-PENTANONE	108-10-1									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	4.5E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
ACETONE	67-64-1									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	1.1E-02	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
BENZENE	71-43-2									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
BROMOBENZENE	108-86-1									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
BROMODICHLOROMETHANE	75-27-4									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
BROMOFORM	75-25-2									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
BROMOMETHANE	74-83-9									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
CARBON DISULFIDE	75-15-0									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory

NOTE: <sup>a</sup> FLAGS

= Detected Result  
J Estimated Detected Result  
U Nondetect Result  
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Rinsate samples collected from nearest catch basin or manhole.

# Appendix A

2009 Analytical Results for Sediment, Concrete Chip and/or Rinsate Water Samples collected from the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01

Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California

Location of Sample	Sample Identifier	QA/QC Type	Value mg/kg	Flag <sup>a</sup>	Date and Time of Sample	Sample Depths Beginning (feet bgs)	Sample Depths Ending (feet bgs)	Removed?	Type of Sample	Source of Measurement
<b>Volatile Organic Compounds</b>										
<b>Analyte</b>	<b>CAS Number</b>									
CARBON TETRACHLORIDE	56-23-5									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
CHLOROBENZENE	108-90-7									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
CHLOROETHANE	75-00-3									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
CHLOROFORM	67-66-3									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
CHLOROMETHANE	74-87-3									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
CIS-1,2-DICHLOROETHENE	156-59-2									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
DIBROMOCHLOROMETHANE	124-48-1									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
DICHLORODIFLUOROMETHANE	75-71-8									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	3.3E-03	UJ	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
ETHYLBENZENE	100-41-4									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
ETHYLENE DIBROMIDE	106-93-4									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
ISOPROPYLBENZENE	98-82-8									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory

NOTE:

Rinsate samples collected from nearest catch basin or manhole.

<sup>a</sup> FLAGS

= Detected Result  
J Estimated Detected Result  
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# Appendix A

2009 Analytical Results for Sediment, Concrete Chip and/or Rinsate Water Samples collected from the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01

Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California

Location of Sample	Sample Identifier	QA/QC Type	Value mg/kg	Flag <sup>a</sup>	Date and Time of Sample	Sample Depths Beginning Ending (feet bgs)	Removed?	Type of Sample	Source of Measurement
<b>Volatile Organic Compounds</b>									
<b>Analyte</b> M,P-XYLENE	<b>CAS Number</b> 108-38-3/1								
IR19D1M13SD0101 METHYL TERTIARY BUTYLETHER	IR19D1M13SD0101-S7 1634-04-4	ORIG	2.2E-03	U	03/10/09 11:00	7.0 7.5	Y	Sediment Sample	Laboratory
IR19D1M13SD0101 METHYLENE CHLORIDE	IR19D1M13SD0101-S7 75-09-2	ORIG	2.2E-03	U	03/10/09 11:00	7.0 7.5	Y	Sediment Sample	Laboratory
IR19D1M13SD0101 N-BUTYLBENZENE	IR19D1M13SD0101-S7 104-51-8	ORIG	9.0E-03	U	03/10/09 11:00	7.0 7.5	Y	Sediment Sample	Laboratory
IR19D1M13SD0101 N-PROPYLBENZENE	IR19D1M13SD0101-S7 103-65-1	ORIG	2.3E-03	U	03/10/09 11:00	7.0 7.5	Y	Sediment Sample	Laboratory
IR19D1M13SD0101 O-XYLENE	IR19D1M13SD0101-S7 95-47-6	ORIG	2.2E-03	U	03/10/09 11:00	7.0 7.5	Y	Sediment Sample	Laboratory
IR19D1M13SD0101 SEC-BUTYLBENZENE	IR19D1M13SD0101-S7 135-98-8	ORIG	2.2E-03	U	03/10/09 11:00	7.0 7.5	Y	Sediment Sample	Laboratory
IR19D1M13SD0101 STYRENE	IR19D1M13SD0101-S7 100-42-5	ORIG	2.2E-03	U	03/10/09 11:00	7.0 7.5	Y	Sediment Sample	Laboratory
IR19D1M13SD0101 TERT-BUTYLBENZENE	IR19D1M13SD0101-S7 98-06-6	ORIG	2.2E-03	U	03/10/09 11:00	7.0 7.5	Y	Sediment Sample	Laboratory
IR19D1M13SD0101 TETRACHLOROETHENE	IR19D1M13SD0101-S7 127-18-4	ORIG	2.2E-03	U	03/10/09 11:00	7.0 7.5	Y	Sediment Sample	Laboratory
IR19D1M13SD0101 TOLUENE	IR19D1M13SD0101-S7 108-88-3	ORIG	2.6E-03	U	03/10/09 11:00	7.0 7.5	Y	Sediment Sample	Laboratory
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0 7.5	Y	Sediment Sample	Laboratory

NOTE: <sup>a</sup> FLAGS

= Detected Result  
J Estimated Detected Result  
U Nondetect Result  
UJ Estimated Nondetect Result

Rinsate samples collected from nearest catch basin or manhole.

# Appendix A

2009 Analytical Results for Sediment, Concrete Chip and/or Rinsate Water Samples collected from the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01

Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California

Location of Sample	Sample Identifier	QA/QC Type	Value mg/kg	Flag <sup>a</sup>	Date and Time of Sample	Sample Depths Beginning Ending (feet bgs)		Removed?	Type of Sample	Source of Measurement
Volatile Organic Compounds										
Analyte	CAS Number									
TRANS-1,2-DICHLOROETHENE	156-60-5									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
TRICHLOROETHENE	79-01-6									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
VINYL CHLORIDE	75-01-4									
IR19D1M13SD0101	IR19D1M13SD0101-S7	ORIG	2.2E-03	U	03/10/09 11:00	7.0	7.5	Y	Sediment Sample	Laboratory
PCB Compounds										
Analyte	CAS Number									
AROCLOR-1016	12674-11-2									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	3.0E-03	U	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory
AROCLOR-1221	11104-28-2									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	5.9E-03	U	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory
AROCLOR-1232	11141-16-5									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	3.9E-03	U	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory
AROCLOR-1242	53469-21-9									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	2.8E-03	U	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory
AROCLOR-1248	12672-29-6									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	1.2E-03	U	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory
AROCLOR-1254	11097-69-1									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	1.2E-01	=	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory
AROCLOR-1260	11096-82-5									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	8.1E-02	=	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory

NOTE:

Rinsate samples collected from nearest catch basin or manhole.

<sup>a</sup> FLAGS

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J Estimated Detected Result  
U Nondetect Result  
UJ Estimated Nondetect Result



# Appendix A

2009 Analytical Results for Sediment, Concrete Chip and/or Rinsate Water Samples collected from the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01

Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California

Location of Sample	Sample Identifier	QA/QC Type	Value mg/kg	Flag <sup>a</sup>	Date and Time of Sample	Sample Depths Beginning (feet bgs)	Sample Depths Ending (feet bgs)	Removed?	Type of Sample	Source of Measurement
<b>PCB Compounds</b>										
<b>Analyte</b>	<b>CAS Number</b>									
AROCLOR-1262	37324-23-5									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	1.5E-02	U	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory
AROCLOR-1268	11100-14-4									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	1.5E-02	U	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory
<b>Metals</b>										
<b>Analyte</b>	<b>CAS Number</b>									
LEAD	7439-92-1									
IR21CB1SD0101	IR21CB1SD0101-S6	ORIG	8.4E+03	=	03/10/09 10:30	6.0	6.5	Y	Sediment Sample	Laboratory
IR21CB2SD0101	IR21CB2SD0101-S3	ORIG	1.4E+02	=	03/25/09 15:40	3.0	3.5	Y	Sediment Sample	Laboratory
IR21CB3SD0101	IR21CB3SD0101-S3.5	ORIG	2.4E+02	=	03/25/09 14:00	3.0	3.5	Y	Sediment Sample	Laboratory
IR21CB4SD0101	IR21CB4SD0101-SD6	ORIG	2.5E+02	=	05/01/09 09:00	6.0	6.5	Y	Sediment Sample	Laboratory
IR21MH2SD0101	IR21MH2SD0101-S4	ORIG	2.1E+02	=	03/25/09 13:50	3.0	3.5	Y	Sediment Sample	Laboratory

NOTE:

Rinsate samples collected from nearest catch basin or manhole.

<sup>a</sup> FLAGS  
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# Appendix A

2009 Analytical Results for Sediment, Concrete Chip and/or Rinsate Water Samples collected from the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01

Site Summary Report for the Storm Sewer System near IR19, IR21/Buildings 386/388/390 Area, PCB Site Building 678 AL#04 and PCB Site Building 830 UL#01 in Investigation Area C2, Lennar Mare Island, Vallejo, California

Location of Sample	Sample Identifier	QA/QC Type	Value (µg/L)	Flag <sup>a</sup>	Date and Time of Sample	Sample Depths Beginning (feet bgs)	Sample Depths Ending (feet bgs)	Removed?	Type of Sample	Source of Measurement
<b>Petroleum Hydrocarbon Compounds</b>										
<b>Analyte</b>	<b>CAS Number</b>									
DIESEL	DRO									
IR21SSCB1CB2	IR21SSCB1CB2-W	ORIG	1.5E+02	J	03/24/10 15:00	3.0	3.5	Y	Rinsate	Laboratory
IR21SSCB1MH5	IR21SSCB1MH5-W	ORIG	5.9E+02	J	03/25/10 10:30	3.0	3.5	Y	Rinsate	Laboratory
IR21SSMH4MH2	IR21SSMH4MH2-W	ORIG	3.6E+02	J	03/26/10 14:15	3.0	3.5	Y	Rinsate	Laboratory
MOTOR OIL	MRO									
IR21SSCB1CB2	IR21SSCB1CB2-W	ORIG	2.4E+02	J	03/24/10 15:00	3.0	3.5	Y	Rinsate	Laboratory
IR21SSCB1MH5	IR21SSCB1MH5-W	ORIG	5.4E+02	=	03/25/10 10:30	3.0	3.5	Y	Rinsate	Laboratory
IR21SSMH4MH2	IR21SSMH4MH2-W	ORIG	8.6E+02	=	03/26/10 14:15	3.0	3.5	Y	Rinsate	Laboratory
<b>Metals</b>										
<b>Analyte</b>	<b>CAS Number</b>									
LEAD	7439-92-1									
IR21SSCB1CB2	IR21SSCB1CB2-W	ORIG	3.7E+00	=	03/24/10 15:00	3.0	3.5	Y	Rinsate	Laboratory
IR21SSCB1MH5	IR21SSCB1MH5-W	ORIG	4.5E+02	=	03/25/10 10:30	3.0	3.5	Y	Rinsate	Laboratory
IR21SSMH4MH2	IR21SSMH4MH2-W	ORIG	1.0E+03	=	03/26/10 14:15	3.0	3.5	Y	Rinsate	Laboratory

NOTE:

Rinsate samples collected from nearest catch basin or manhole.

<sup>a</sup> FLAGS

= Detected Result  
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U Nondetect Result  
UJ Estimated Nondetect Result

## **Appendix B**

### **Unvalidated Laboratory Analytical Reports**

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**Appendix C**  
**Rinsate Wastewater Analytical Results and**  
**Permit to Discharge to Sanitary Sewer System**

**Chain of Custody Record**      COC Number: **CTL-IDW-193**

COC Number: CTL-IDW-193

CH2MHILL 3/30/2010 10:45:47 AM Page 1 of 1

<b>Project Name</b>	Mare Island	<b>Location</b>	Mare Island
<b>Task Order</b>	<b>Project:</b> IDW IR21SS Flushing		
<b>Project Number</b>	264204.16.A4.04		
<b>Project Manager</b>	Paula Bolio		
<b>Sample Manager</b>	Roger Lucich	(925) 250-4441	
<b>Turnaround Time</b>	2 Days		
<b>PO Number</b>	264204.16.A4.04		

Sample ID	Sample Date/Time	Type	Matrix	# Containers	Preserv
-----------	------------------	------	--------	--------------	---------

IDWIR21SSCOV001-W 30-Mar-10 10:15 N Water

Field Filtered:

Field Filtered: ☐

Field Filtered: ☐

Field Filtered: ☐ : ☐

Field Filtered:

**Total Containers:**

**MS = Matrix Spike      SD = Matrix Spike Duplicate**

## Signatures

Date/Time

### Shipping Details

**Approved by**

**Sampled by**

Relinquished by

Received by

Relinquished by

Received by

**Method of Shipment:**

On Ice: yes / no

**Airbill No:**

Lab Name: Curtis & Tompkins, Ltd.

**Lab Phone: (510) 486-0925**

**ATTN:**

### Sample Custody

and

**Lisa Brooker**

**Special Instructions:**

: Report Copy to

Mark Cichy  
(520) 229-3274

## COOLER RECEIPT CHECKLIST



Curtis &amp; Tompkins, Ltd.

Login # 219122 Date Received 3-30-10 Number of coolers 1  
 Client CCE Project MARI ISLAND

Date Opened 3-30-10 By (print) S. EVANS (sign) [Signature]  
 Date Logged in 4 By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES ☒ NO  
 Shipping info

2A. Were custody seals present? ... ☒ YES (circle) on cooler on samples ☐ NO  
 How many 1 Name SIGNATURE Date 3/30/10

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

☒ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None  
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

## 7. Temperature documentation:

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 0.0

☒ Samples Received on ice & cold without a temperature blank

☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES ☒ NO

If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are samples in the appropriate containers for indicated tests? YES NO

11. Are sample labels present, in good condition and complete? YES NO

12. Do the sample labels agree with custody papers? YES NO

13. Was sufficient amount of sample sent for tests requested? YES NO

14. Are the samples appropriately preserved? YES NO N/A

15. Are bubbles > 6mm absent in VOA samples? YES NO N/A

16. Was the client contacted concerning this sample delivery? YES NO

If YES, Who was called?  By  Date:


## COMMENTS

TEMP TAKEN FROM COOLER



Curtis & Tompkins Sample Preservation for 219122

Sample	pH: <2	>12	Other
-001a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Analyst:   
 Date: 2/20/10



Curtis &amp; Tompkins, Ltd.

**Pesticides**

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	EPA 608
Project#:	264204.16.A4.04	Analysis:	EPA 608
Field ID:	IDWIR21SSCOV001-W	Batch#:	161476
Lab ID:	219122-001	Sampled:	03/30/10
Matrix:	Water	Received:	03/30/10
Units:	ug/L	Prepared:	03/30/10
Diln Fac:	1.000	Analyzed:	04/02/10

Analyte	Result	RL	MDL
alpha-BHC	ND	0.05	0.007
beta-BHC	ND	0.05	0.007
gamma-BHC	ND	0.05	0.007
delta-BHC	ND	0.05	0.008
Heptachlor	ND	0.05	0.009
Aldrin	ND	0.05	0.006
Heptachlor epoxide	ND	0.1	0.006
Endosulfan I	ND	0.05	0.006
Dieldrin	ND	0.1	0.01
4,4'-DDE	ND	0.1	0.02
Endrin	ND	0.1	0.02
Endosulfan II	ND	0.1	0.01
Endosulfan sulfate	ND	0.1	0.02
4,4'-DDD	ND	0.1	0.02
Endrin aldehyde	ND	0.1	0.02
4,4'-DDT	ND	0.1	0.02
alpha-Chlordane	ND	0.05	0.007
gamma-Chlordane	0.008 C J	0.05	0.007
Methoxychlor	ND	0.5	0.1
Endrin ketone	ND	0.1	0.02
Toxaphene	ND	1.0	0.3

Surrogate	%REC	Limits
TCMX	65	45-125
Decachlorobiphenyl	67	34-133

C= Presence confirmed, but RPD between columns exceeds 40%

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit



Curtis &amp; Tompkins, Ltd.

## Batch QC Report

Pesticides			
Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	EPA 608
Project#:	264204.16.A4.04	Analysis:	EPA 608
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC538320	Batch#:	161476
Matrix:	Water	Prepared:	03/30/10
Units:	ug/L	Analyzed:	04/02/10

Analyte	Result	RL	MDL
alpha-BHC	ND	0.05	0.007
beta-BHC	ND	0.05	0.007
gamma-BHC	ND	0.05	0.007
delta-BHC	ND	0.05	0.008
Heptachlor	ND	0.05	0.009
Aldrin	ND	0.05	0.006
Heptachlor epoxide	ND	0.1	0.006
Endosulfan I	ND	0.05	0.006
Dieldrin	ND	0.1	0.01
4,4'-DDE	ND	0.1	0.02
Endrin	ND	0.1	0.02
Endosulfan II	ND	0.1	0.01
Endosulfan sulfate	ND	0.1	0.02
4,4'-DDD	ND	0.1	0.02
Endrin aldehyde	ND	0.1	0.02
4,4'-DDT	ND	0.1	0.02
alpha-Chlordane	ND	0.05	0.007
gamma-Chlordane	ND	0.05	0.007
Methoxychlor	ND	0.5	0.1
Endrin ketone	ND	0.1	0.02
Toxaphene	ND	1.0	0.3

Surrogate	%REC	Limits
TCMX	86	45-125
Decachlorobiphenyl	95	34-133

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit





Curtis &amp; Tompkins, Ltd.

## Batch QC Report

## Pesticides

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	EPA 608
Project#:	264204.16.A4.04	Analysis:	EPA 608
Matrix:	Water	Batch#:	161476
Units:	ug/L	Prepared:	03/30/10
Diln Fac:	1.000	Analyzed:	04/02/10

Type: BS

Lab ID: QC538321

Analyte	Spiked	Result	%REC	Limits
alpha-BHC	0.2000	0.1830	91	75-125
beta-BHC	0.2000	0.1859	93	51-125
gamma-BHC	0.2000	0.1873	94	73-125
Heptachlor	0.2000	0.1781	89	45-128
Aldrin	0.2000	0.1730	87	47-125
Heptachlor epoxide	0.2000	0.1881	94	53-134
Dieldrin	0.4000	0.3514	88	42-132
4,4'-DDE	0.4000	0.3899	97	45-139
Endrin	0.4000	0.3527	88	43-134
Endosulfan sulfate	0.4000	0.3646	91	46-141
4,4'-DDD	0.4000	0.3737 b	93	48-136
4,4'-DDT	0.4000	0.4190	105	34-143
Methoxychlor	2.000	1.828	91	73-142

Surrogate	%REC	Limits
TCMX	82	45-125
Decachlorobiphenyl	90	34-133

Type: BSD

Lab ID: QC538322

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
alpha-BHC	0.2000	0.1738	87	75-125	5	30
beta-BHC	0.2000	0.1695	85	51-125	9	30
gamma-BHC	0.2000	0.1741	87	73-125	7	30
Heptachlor	0.2000	0.1625	81	45-128	9	30
Aldrin	0.2000	0.1614	81	47-125	7	30
Heptachlor epoxide	0.2000	0.1756	88	53-134	7	30
Dieldrin	0.4000	0.3306	83	42-132	6	30
4,4'-DDE	0.4000	0.3565	89	45-139	9	30
Endrin	0.4000	0.3247	81	43-134	8	30
Endosulfan sulfate	0.4000	0.3382	85	46-141	8	30
4,4'-DDD	0.4000	0.3390 b	85	48-136	10	30
4,4'-DDT	0.4000	0.3701	93	34-143	12	30
Methoxychlor	2.000	1.636	82	73-142	11	30

Surrogate	%REC	Limits
TCMX	78	45-125
Decachlorobiphenyl	84	34-133

b= See narrative

RPD= Relative Percent Difference

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Curtis &amp; Tompkins, Ltd.

PCB			
Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	EPA 608
Project#:	264204.16.A4.04	Analysis:	EPA 608
Field ID:	IDWIR21SSCOV001-W	Sampled:	03/30/10
Matrix:	Water	Received:	03/30/10
Units:	ug/L	Prepared:	03/30/10
Diln Fac:	1.000	Analyzed:	04/01/10
Batch#:	161477		

Type: SAMPLE Lab ID: 219122-001

Analyte	Result	RL	MDL
Aroclor-1016	ND	0.50	0.12
Aroclor-1221	ND	1.0	0.32
Aroclor-1232	ND	0.50	0.12
Aroclor-1242	ND	0.50	0.084
Aroclor-1248	ND	0.50	0.14
Aroclor-1254	ND	0.50	0.12
Aroclor-1260	1.3	0.50	0.062
Aroclor-1262	ND	0.50	
Aroclor-1268	ND	0.50	

Surrogate	%REC	Limits
TCMX	86	34-133
Decachlorobiphenyl	82	34-133

Type: BLANK Lab ID: QC538323

Analyte	Result	RL	MDL
Aroclor-1016	ND	0.50	0.12
Aroclor-1221	ND	1.0	0.32
Aroclor-1232	ND	0.50	0.12
Aroclor-1242	ND	0.50	0.084
Aroclor-1248	ND	0.50	0.14
Aroclor-1254	ND	0.50	0.12
Aroclor-1260	ND	0.50	0.062
Aroclor-1262	ND	0.50	
Aroclor-1268	ND	0.50	

Surrogate	%REC	Limits
TCMX	81	34-133
Decachlorobiphenyl	88	34-133

ND= Not Detected

RL= Reporting Limit

MDL= Method Detection Limit



Curtis &amp; Tompkins, Ltd.

## Batch QC Report

## PCB

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	EPA 608
Project#:	264204.16.A4.04	Analysis:	EPA 608
Matrix:	Water	Batch#:	161477
Units:	ug/L	Prepared:	03/30/10
Diln Fac:	1.000	Analyzed:	04/01/10

Type: BS Lab ID: QC538324

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	5.000	4.659	93	54-125
Aroclor-1260	5.000	4.655	93	41-126

Surrogate	%REC	Limits
TCMX	82	34-133
Decachlorobiphenyl	82	34-133

Type: BSD Lab ID: QC538325

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	5.000	4.900	98	54-125	5	30
Aroclor-1260	5.000	5.110	102	41-126	9	30

Surrogate	%REC	Limits
TCMX	85	34-133
Decachlorobiphenyl	93	34-133

RPD= Relative Percent Difference





Curtis & Tompkins, Ltd.

### Metals Analytical Report

Lab #:	219122	Project#:	264204.16.A4.04
Client:	CH2M Hill Constructors Inc.	Location:	IR21 Storm Sewer Flushing
Field ID:	IDWIR21SSCOV001-W	Sampled:	03/30/10
Lab ID:	219122-001	Received:	03/30/10
Matrix:	Water	Prepared:	03/31/10
Units:	ug/L		

Analyte	Result	RL	MDL	Diln	Fac	Batch#	Analyzed	Prep	Analysis
Arsenic	8.8	1.0	0.11	5.000		161529	04/01/10	EPA 200.8	EPA 200.8
Beryllium	ND	1.0	0.12	5.000		161529	04/01/10	EPA 200.8	EPA 200.8
Cadmium	0.31 J	1.0	0.083	5.000		161529	04/01/10	EPA 200.8	EPA 200.8
Chromium	3.2	1.0	0.15	5.000		161529	04/01/10	EPA 200.8	EPA 200.8
Copper	24	1.0	0.13	5.000		161529	04/01/10	EPA 200.8	EPA 200.8
Lead	34	1.0	0.15	5.000		161529	04/01/10	EPA 200.8	EPA 200.8
Mercury	2.3	0.20	0.015	1.000		161484	03/31/10	METHOD	EPA 245.1
Nickel	11	1.0	0.11	5.000		161529	04/01/10	EPA 200.8	EPA 200.8
Selenium	0.44 J	1.0	0.15	5.000		161529	04/01/10	EPA 200.8	EPA 200.8
Silver	ND	1.0	0.068	5.000		161529	04/01/10	EPA 200.8	EPA 200.8
Zinc	85	5.0	1.1	5.000		161529	04/01/10	EPA 200.8	EPA 200.8

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit



Curtis & Tompkins, Ltd.

Batch QC Report

**Metals Analytical Report**

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	EPA 245.1
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	161484
Lab ID:	QC538362	Prepared:	03/31/10
Matrix:	Water	Analyzed:	03/31/10
Units:	ug/L		

Result	RL	MDL
ND	0.20	0.015

ND= Not Detected at or above MDL  
RL= Reporting Limit  
MDL= Method Detection Limit



Curtis & Tompkins, Ltd.

Batch QC Report

**Metals Analytical Report**

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	EPA 245.1
Analyte:	Mercury	Batch#:	161484
Matrix:	Water	Prepared:	03/31/10
Units:	ug/L	Analyzed:	03/31/10
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC538363	2.500	2.500	100	77-124		
BSD	QC538364	2.500	2.520	101	77-124	1	12

RPD= Relative Percent Difference



Batch QC Report

**Metals Analytical Report**

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	EPA 245.1
Analyte:	Mercury	Batch#:	161484
Field ID:	IDWIR21SSCOV001-W	Sampled:	03/30/10
MSS Lab ID:	219122-001	Received:	03/30/10
Matrix:	Water	Prepared:	03/31/10
Units:	ug/L	Analyzed:	03/31/10
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC538365	2.330	2.500	4.800	99	53-149		
MSD	QC538366		2.500	4.830	100	53-149	1	19

RPD= Relative Percent Difference



Curtis & Tompkins, Ltd.

# Batch QC Report

## Metals Analytical Report

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M-Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	EPA 245.1
Analyte:	Mercury	Units:	ug/L
Field ID:	IDWIR21SSCOV001-W	Diln Fac:	5.000
Type:	Serial Dilution	Batch#:	161484
MSS Lab ID:	219122-001	Sampled:	03/30/10
Lab ID:	QC538367	Received:	03/30/10
Matrix:	Water	Analyzed:	03/31/10

MSS Result	MSS RL	Result	RL	% Diff	Lim
2.330	0.2000	2.430	1.000	4	10

RL= Reporting Limit

Batch QC Report

**Metals Analytical Report**

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	EPA 200.8
Project#:	264204.16.A4.04	Analysis:	EPA 200.8
Type:	BLANK	Diln Fac:	5.000
Lab ID:	QC538563	Batch#:	161529
Matrix:	Water	Prepared:	03/31/10
Units:	ug/L	Analyzed:	04/01/10

Analyte	Result	RL	MDL
Arsenic	ND	1.0	0.11
Beryllium	ND	1.0	0.12
Cadmium	ND	1.0	0.083
Chromium	ND	1.0	0.15
Copper	ND	1.0	0.13
Lead	ND	1.0	0.15
Nickel	ND	1.0	0.11
Selenium	ND	1.0	0.15
Silver	ND	1.0	0.068
Zinc	ND	5.0	1.1

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit





Curtis &amp; Tompkins, Ltd.

## Batch QC Report

## Metals Analytical Report

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	EPA 200.8
Project#:	264204.16.A4.04	Analysis:	EPA 200.8
Matrix:	Water	Batch#:	161529
Units:	ug/L	Prepared:	03/31/10
Diln Fac:	5.000	Analyzed:	04/01/10

Type: BS

Lab ID: QC538564

Analyte	Spiked	Result	%REC	Limits
Arsenic	100.0	95.95	96	73-116
Beryllium	100.0	93.90	94	61-145
Cadmium	100.0	92.70	93	77-116
Chromium	100.0	93.40	93	78-124
Copper	100.0	94.00	94	70-125
Lead	100.0	95.05	95	76-121
Nickel	100.0	94.25	94	78-128
Selenium	100.0	94.60	95	68-127
Silver	100.0	89.55	90	64-123
Zinc	100.0	97.15	97	66-124

Type: BSD

Lab ID: QC538565

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Arsenic	100.0	95.30	95	73-116	1	10
Beryllium	100.0	95.90	96	61-145	2	11
Cadmium	100.0	93.75	94	77-116	1	10
Chromium	100.0	93.15	93	78-124	0	10
Copper	100.0	94.65	95	70-125	1	14
Lead	100.0	97.00	97	76-121	2	11
Nickel	100.0	96.00	96	78-128	2	10
Selenium	100.0	96.85	97	68-127	2	13
Silver	100.0	90.20	90	64-123	1	11
Zinc	100.0	100.8	101	66-124	4	18

RPD= Relative Percent Difference



Curtis &amp; Tompkins, Ltd.

## Batch QC Report

## Metals Analytical Report

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	EPA 200.8
Project#:	264204.16.A4.04	Analysis:	EPA 200.8
Field ID:	IDWIR21SSCOV001-W	Batch#:	161529
MSS Lab ID:	219122-001	Sampled:	03/30/10
Matrix:	Water	Received:	03/30/10
Units:	ug/L	Prepared:	03/31/10
Diln Fac:	5.000	Analyzed:	04/01/10

Type: MS Lab ID: QC538566

Analyte	MSS Result	Spiked	Result	%REC	Limits
Arsenic	8.825	100.0	109.8	101	65-126
Beryllium	<0.1188	100.0	99.25	99	66-130
Cadmium	0.3065	100.0	97.20	97	69-118
Chromium	3.158	100.0	99.00	96	61-130
Copper	24.06	100.0	115.9	92	50-136
Lead	33.67	100.0	130.5	97	58-126
Nickel	10.75	100.0	106.9	96	61-132
Selenium	0.4350	100.0	98.70	98	59-135
Silver	<0.06798	100.0	92.95	93	52-126
Zinc	84.75	100.0	184.2	99	44-141

Type: MSD Lab ID: QC538567

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Arsenic	100.0	105.6	97	65-126	4	28
Beryllium	100.0	97.20	97	66-130	2	22
Cadmium	100.0	95.35	95	69-118	2	21
Chromium	100.0	96.00	93	61-130	3	32
Copper	100.0	113.1	89	50-136	2	48
Lead	100.0	127.9	94	58-126	2	25
Nickel	100.0	103.4	93	61-132	3	30
Selenium	100.0	96.10	96	59-135	3	28
Silver	100.0	91.00	91	52-126	2	24
Zinc	100.0	176.3	92	44-141	4	54

RPD= Relative Percent Difference



Curtis & Tompkins, Ltd.

Batch QC Report

Metals Analytical Report

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	EPA 200.8
Project#:	264204.16.A4.04	Analysis:	EPA 200.8
Field ID:	IDWIR21SSCOV001-W	Diln Fac:	25.00
Type:	Serial Dilution	Batch#:	161529
MSS Lab ID:	219122-001	Sampled:	03/30/10
Lab ID:	QC538568	Received:	03/30/10
Matrix:	Water	Analyzed:	04/01/10
Units:	ug/L		

Analyte	MSS Result	MSS RL	Result	RL	% Diff	Lim
Arsenic	8.825	1.000	8.333	2.500	6	10
Beryllium	ND	1.000	ND	2.500	NC	10
Cadmium	0.3065	1.000	ND	2.500	NC	10
Chromium	3.158	1.000	3.215	2.500	NC	10
Copper	24.06	1.000	22.74	2.500	5	10
Lead	33.67	1.000	32.50	2.500	3	10
Nickel	10.75	1.000	11.45	2.500	6	10
Selenium	0.4350	1.000	ND	2.500	NC	10
Silver	ND	1.000	ND	2.500	NC	10
Zinc	84.75	5.000	87.43	16.27	3	10

NC= Not Calculated

ND= Not Detected at or above MDL

RL= Reporting Limit



Curtis & Tompkins, Ltd.

# Batch QC Report

## Metals Analytical Report

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	EPA 200.8
Project#:	264204.16.A4.04	Analysis:	EPA 200.8
Field ID:	IDWIR21SSCOV001-W	Diln Fac:	5.000
Type:	Post Digest Spike	Batch#:	161529
MSS Lab ID:	219122-001	Sampled:	03/30/10
Lab ID:	QC538569	Received:	03/30/10
Matrix:	Water	Analyzed:	04/01/10
Units:	ug/L		

Analyte	MSS Result	Spiked	Result	%REC	Limits
Arsenic	8.825	500.0	484.6	95	75-125
Beryllium	<0.1188	500.0	506.0	101	75-125
Cadmium	0.3065	500.0	492.8	98	75-125
Chromium	3.158	500.0	465.4	92	75-125
Copper	24.06	500.0	476.4	90	75-125
Lead	33.67	500.0	553.5	104	75-125
Nickel	10.75	500.0	464.7	91	75-125
Selenium	0.4350	500.0	466.6	93	75-125
Silver	<0.06798	500.0	498.2	100	75-125
Zinc	84.75	500.0	555.5	94	75-125





Curtis & Tompkins, Ltd.

### Total Oil & Grease (HEM)

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	EPA 1664A
Analyte:	Oil & Grease (HEM)	Batch#:	161547
Field ID:	IDWIR21SSCOV001-W	Sampled:	03/30/10
Matrix:	Water	Received:	03/30/10
Units:	mg/L		

Type	Lab ID	Result	RL	MDL	Diln Fac	Prepared	Analyzed
SAMPLE	219122-001	8.89	5.55	1.40	1.110	03/31/10	04/01/10
BLANK	QC538627	ND	5.00	1.20	1.000	03/29/10	03/29/10

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit



Curtis & Tompkins, Ltd.

# Batch QC Report

## Total Oil & Grease (HEM)

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	EPA 1664A
Analyte:	Oil & Grease (HEM)	Diln Fac:	1.000
Matrix:	Water	Batch#:	161547
Units:	mg/L	Analyzed:	03/29/10

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC538628	40.00	37.40	93	78-114		
BSD	QC538629	40.00	43.60	109	78-114	15	18

RPD= Relative Percent Difference



Curtis & Tompkins, Ltd.

Total Cyanide			
Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	SM4500CN-E
Analyte:	Cyanide	Batch#:	161585
Field ID:	IDWIR21SSCOV001-W	Sampled:	03/30/10
Matrix:	Water	Received:	03/30/10
Units:	mg/L	Analyzed:	04/02/10
Diln Fac:	1.000		

Type	Lab ID	Result	RL	MDL
SAMPLE	219122-001	ND	0.01	0.0009
BLANK	QC538796	ND	0.01	0.0009

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit



Curtis & Tompkins, Ltd.

# Batch QC Report

## Total Cyanide

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	SM4500CN-E
Analyte:	Cyanide	Diln Fac:	1.000
Field ID:	IDWIR21SSCOV001-W	Batch#:	161585
MSS Lab ID:	219122-001	Sampled:	03/30/10
Matrix:	Water	Received:	03/30/10
Units:	mg/L	Analyzed:	04/02/10

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC538797		0.2000	0.2013	101	75-125		
MS	QC538798	<0.01000	0.2000	0.2037	102	75-125		
MSD	QC538799		0.2000	0.1902	95	75-125	7	20

RPD= Relative Percent Difference





Curtis & Tompkins, Ltd.

pH			
Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	EPA 9040C
Analyte:	pH	Diln Fac:	1.000
Field ID:	IDWIR21SSCOV001-W	Batch#:	161473
Lab ID:	219122-001	Sampled:	03/30/10 10:15
Matrix:	Water	Received:	03/30/10
Units:	SU	Analyzed:	03/30/10 18:05
Result		RL	
6.9		1.0	

RL= Reporting Limit



Curtis & Tompkins, Ltd.

# Batch QC Report

pH			
Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	EPA 9040C
Analyte:	pH	Units:	SU
Field ID:	IDWIR21SSCOV001-W	Diln Fac:	1.000
Type:	SDUP	Batch#:	161473
MSS Lab ID:	219122-001	Sampled:	03/30/10 10:15
Lab ID:	QC538307	Received:	03/30/10
Matrix:	Water	Analyzed:	03/30/10 18:05

MSS Result	Result	RL	RPD	Lim
6.880	6.870	1.000	0	1

RL= Reporting Limit

RPD= Relative Percent Difference



Curtis & Tompkins, Ltd.

### Phenolic Compounds

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	EPA 420.1
Analyte:	Phenolic Compounds	Batch#:	161550
Field ID:	IDWIR21SSCOV001-W	Sampled:	03/30/10
Matrix:	Water	Received:	03/30/10
Units:	mg/L	Prepared:	04/01/10
Diln Fac:	1.000	Analyzed:	04/02/10

Type	Lab ID	Result	RL	MDL
SAMPLE	219122-001	ND	0.050	0.011
BLANK	QC538640	ND	0.050	0.011

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit



Curtis &amp; Tompkins, Ltd.

## Batch QC Report

## Phenolic Compounds

Lab #:	219122	Location:	IR21 Storm Sewer Flushing
Client:	CH2M Hill Constructors Inc.	Prep:	METHOD
Project#:	264204.16.A4.04	Analysis:	EPA 420.1
Analyte:	Phenolic Compounds	Batch#:	161550
Field ID:	IDWIR21SSCOV001-W	Sampled:	03/30/10
MSS Lab ID:	219122-001	Received:	03/30/10
Matrix:	Water	Prepared:	04/01/10
Units:	mg/L	Analyzed:	04/02/10
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC538641		1.000	0.9598	96	73-109		
MS	QC538642	<0.05000	1.000	0.9966	100	1-174		
MSD	QC538643		1.000	1.031	103	1-174	3	36

RPD= Relative Percent Difference

Page 1 of 1

20.0



**VALLEJO SANITATION & FLOOD CONTROL DISTRICT  
SPECIAL WASTEWATER DISCHARGE PERMIT**

ISSUED TO:

**CH2MHILL – John Blasco – Jeff Paik**

DESCRIPTION OF PERMITTED DISCHARGE:

**Less than 10,000 gallons of treated wastewater from flushing the storm system at Bldg. 386.  
Discharging into a sanitary sewer manhole on the "southwest" corner of Bldg. 386 MI.**

EFFECTIVE DATE:

**04/06/10**

EXPIRATION DATE:

**05/06/10**

INSPECTOR:

**K. Barnett**

The above named permittee is hereby authorized to discharge wastewater to the Vallejo Sanitation and Flood Control District sanitary sewer system. This discharge will be in accordance with the Standard Terms and Conditions of this permit. See reverse.

The permittee shall report to the District's Pollution Control Department any changes (permanent or temporary) in operations that may significantly change the quantity and/or quality of the discharge.

This permit is not transferable to any other organization or owner. Any change in ownership will require a new application to be completed and a new permit issued.

This permit is subject to revocation for reasons of falsification or violation of the terms of this agreement or other applicable regulations.

**AGREEMENT TO COMPLY**

I agree to be bound by and comply with each and every provision of this permit and I understand, acknowledge, and agree that this permit is a binding agreement enforceable in a court of law.

I also agree that this discharge permit may be terminated by the District as a consequence of my failure to comply with the terms and conditions stated herein.

I understand that no part of this permit may be assigned or transferred without prior written consent of the Vallejo Sanitation and Flood Control District and that I shall defend, indemnify and hold harmless the Vallejo Sanitation and Flood Control District, its officers, employees and agents against any claim, loss or liability arising out of this agreement due to my own willful or negligent acts or omission(s). I further agree to comply with all applicable laws, ordinances, codes and regulations of the Federal, state and local governments. I certify that I am fully authorized and competent to enter this agreement on behalf of the person, company, entity or organization that I represent.

Signature:

*John C. Blasco*

Date:

*April 7, 2010*

Supporting lab report is located:

k:\pcd\files\bustype\specialdischargepermits\CH2MHILL\bldg386stormflushing\bldg386permit

## STANDARD TERMS AND CONDITIONS FOR SPECIAL WASTEWATER DISCHARGES

1. 40 CFR Part 136 methods must be used and must demonstrate compliance with the discharge limit. The analyst(s) initials must be included with results.
2. No person shall discharge wastewater with a pH below 6.0 or above 9.0.
3. No person shall discharge any liquid or waste containing more than 100 mg/L of petroleum based oil and grease, or containing any fat, oil, grease or other substance that will become solid or visibly viscous at temperatures between 0 degrees and 60 degrees Centigrade.
4. Discharge to the sanitary sewer shall be conducted at the entry point approved by the District. Discharge to any other location is prohibited.
5. Discharge at a rate which causes an hydraulic overload of the sanitary sewer system is strictly prohibited.
6. The permittee shall make every effort to reduce or mitigate any odors resulting from the discharge of wastewater to the sanitary sewer system.
7. The District shall inspect the facilities at the address of the discharge to ascertain whether all requirements, terms and conditions of wastewater discharge are being complied with. Persons or occupants of the premises where wastewater is being created or discharged shall allow duly appointed District personnel ready access at all reasonable times to all parts of the premises for the purpose of inspection, sampling, or the performance of any of their duties. The District, or its designated representatives, shall have the right to examine and copy those records necessary to fulfill any of their duties.
8. A discharge permit is subject to revocation for reasons of falsification of data, violation of the terms of agreement, or other applicable regulations. The District may also fine the permit holder a minimum of **\$1000 per day** for each violation of wastewater discharge requirements.
9. The permittee shall maintain any pretreatment units on a regular basis as stipulated in the manufacturer's specifications. A file which documents all maintenance activity, shall be available to the District within 24 hours of the initial request.
10. Spills to the sanitary sewer or the storm collection system shall be immediately reported to the District at (707) 644-8949. A written report shall be submitted to the District within 10 calendar days. The report shall describe the event, the start time, the specific source, quantity discharged, the point of entry to the sanitary sewer or storm collection system, the time the spillage ceased and steps taken to prevent another incident.
11. The discharge of non-stormwater discharges to the District's storm drain system or to any public drainage system that drains to the District's storm drain system is prohibited.
12. In order to prevent pollution of the storm drain, the permittee shall implement and maintain good housekeeping practices. No equipment washing shall be permitted at this location.
13. The District reserves the right to direct the permittee to cease the discharge at any time during the discharge period.

**Appendix D**  
**Waste Profile and Waste Disposal Manifest**

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<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number CAR 000123117	2. Page 1 of 1	3. Emergency Response Phone 714 244 2444	4. Manifest Tracking Number <b>005182637 JJK</b>		
5. Generator's Name and Mailing Address LUNAR MADE ISLAND LLC 2500 WEST L. RIVER RD SUNNYVALE CA 94086			Generator's Site Address (if different than mailing address)				
Generator's Phone: 714 244 2444							
6. Transporter 1 Company Name LUNAR MADE ISLAND LLC			U.S. EPA ID Number CAR 000123117				
7. Transporter 2 Company Name			U.S. EPA ID Number				
8. Designated Facility Name and Site Address CLAW HAZARDOUS WASTE TREATMENT LLC 2500 WEST L. RIVER RD SUNNYVALE CA 94086			U.S. EPA ID Number CAR 000123117				
Facility's Phone: 714 244 2444							
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
		1. LUNAR MADE ISLAND LLC SUNNYVALE CA	100	55	55	Y	211
		2.					
		3.					
		4.					
14. Special Handling Instructions and Additional Information To be used for special handling instructions and additional information.							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Officer's Printed/Typed Name LUNAR MADE ISLAND LLC			Signature [Signature]		Month 06	Day 17	Year 10
TRANSPORTER INTL	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit		Date leaving U.S.:		
	Transporter signature (for exports only):						
TRANSPORTER	17. Transporter Acknowledgment of Receipt of Materials		Signature		Month	Day	Year
	Transporter 1 Printed/Typed Name Miguel Ruizman		[Signature]		06	17	10
TRANSPORTER	Transporter 2 Printed/Typed Name		Signature		Month	Day	Year
NATED FACILITY	18. Discrepancy						
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
	Manifest Reference Number:						
	18b. Alternate Facility (or Generator) U.S. EPA ID Number						
NATED FACILITY	Facility's Phone:						
	18c. Signature of Alternate Facility (or Generator)						Month Day Year
NATED FACILITY	19. Hazardous Waste Report Management Method Codes (i.e., codes for: hazardous waste treatment, disposal, and recycling systems)						
	1.	2.	3.	4.			
NATED FACILITY	20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a						
	Printed/Typed Name		Signature		Month	Day	Year



# WASTE MATERIAL PROFILE SHEET

Clean Harbors Profile No. CH441486B

## A. GENERAL INFORMATION

GENERATOR EPA ID #/REGISTRATION # **CAR000123117** GENERATOR NAME: **Lennar Mare Island LLC**  
GENERATOR CODE (Assigned by Clean Harbors) **LE1713** CITY **Vallejo** STATE/PROVINCE **CA** ZIP/POSTAL CODE **94592**  
ADDRESS **900 Walnut Avenue** PHONE: **(707) 246-2659**  
CUSTOMER CODE (Assigned by Clean Harbors) **IN1760** CUSTOMER NAME: **Innovative Construction Solutions- Norcal**  
ADDRESS **4721 Tidewater Avenue Suite D** CITY **Oakland** STATE/PROVINCE **CA** ZIP/POSTAL CODE **94601**

## B. WASTE DESCRIPTION

WASTE DESCRIPTION: **IR-21 Storm Sewer Cleaning Sediments Bldg. 386,388, 390**

PROCESS GENERATING WASTE (Please provide detailed description of process generating waste):

**Storm Sewer Cleaning Sediments from Bldg. 386,388, 390 Waste solids from dewatering of wash waters**

## C. PHYSICAL PROPERTIES (at 25C or 77F)

<b>PHYSICAL STATE</b> <input checked="" type="checkbox"/> SOLID WITHOUT FREE LIQUID POWDER MONOLITHIC SOLID LIQUID WITH NO SOLIDS LIQUID/SOLID MIXTURE % FREE LIQUID % SETTLED SOLID % TOTAL SUSPENDED SOLID SLUDGE GAS/AEROSOL	<b>NUMBER OF PHASES/LAYERS</b>				<b>VISCOSITY (If liquid present)</b> 1 - 100 (e.g. Water) 101 - 500 (e.g. Motor Oil) 501 - 10,000 (e.g. Molasses) > 10,000	<b>COLOR</b> <b>brown</b>	
	1	2	3	TOP			0.00
	% BY VOLUME (Approx.)			MIDDLE			0.00
				BOTTOM			0.00
<b>ODOR</b> <input checked="" type="checkbox"/> NONE MILD STRONG Describe:		<b>BOILING POINT °F (°C)</b> ≤ 95 (≤35) 95 - 100 (35-38) 101 - 129 (38-54) ≥ 130 (>54)		<b>MELTING POINT °F (°C)</b> ≤ 140 (<60) 140-200 (60-93) <input checked="" type="checkbox"/> > 200 (>93)	<b>TOTAL ORGANIC CARBON</b> <input checked="" type="checkbox"/> ≤ 1% 1-9% ≥ 10%		
<b>FLASH POINT °F (°C)</b> ≤ 73 (<23) 73 - 100 (23-38) 101 - 140 (38-60) 141 - 200 (60-93) > 200 (>93)	<b>pH</b> ≤ 2 2.1 - 6.9 <input checked="" type="checkbox"/> 7 (Neutral) 7.1 - 12.4 ≥ 12.5	<b>SPECIFIC GRAVITY</b> ≤ 0.8 (e.g. Gasoline) 0.8-1.0 (e.g. Ethanol) <input checked="" type="checkbox"/> 1.0 (e.g. Water) 1.0-1.2 (e.g. Antifreeze) > 1.2 (e.g. Methylene Chloride)	<b>ASH:</b> <input checked="" type="checkbox"/> < 0.1 0.1 - 1.0 1.1 - 5.0 5.1 - 20.0	<b>BTU/LB (MJ/kg)</b> <input checked="" type="checkbox"/> < 2,000 (<4.6) 2,000-5,000 (4.6-11.6) 5,000-10,000 (11.6-23.2) > 10,000 (>23.2) Actual:			

**D. COMPOSITION** (List the complete composition of the waste, include any inert components and/or debris. Ranges for individual components are acceptable. If a trade name is used, please supply an MSDS. Please do not use abbreviations.)

CHEMICAL	MIN	MAX	UOM
CHROMIUM	4.3400000	4.3400000	PPM
DEBRIS (PAPER, PLASTIC, GLOVES)	0.0000000	15.0000000	%
LEAD	22.2000000	22.2000000	PPM
PCB	500.0000000	500.0000000	PPB
SOIL	95.0000000	100.0000000	%

DOES THIS WASTE CONTAIN ANY HEAVY GAUGE METAL DEBRIS OR OTHER LARGE OBJECTS (EX., METAL PLATE OR PIPING >1/4" THICK OR >12" LONG, METAL REINFORCED HOSE >12" LONG, METAL WIRE >12" LONG, METAL VALVES, PIPE FITTINGS, CONCRETE REINFORCING BAR OR PIECES OF CONCRETE >3")? ☒ YES NO

If yes, describe, including dimensions: **paper, plastic, wood debris < 1'**

DOES THIS WASTE CONTAIN ANY METALS IN POWDERED OR OTHER FINELY DIVIDED FORM? YES ☒ NO

DOES THIS WASTE CONTAIN OR HAS IT CONTACTED ANY OF THE FOLLOWING: ANIMAL WASTES, HUMAN BLOOD, BLOOD PRODUCTS, BODY FLUIDS, MICROBIOLOGICAL WASTE, PATHOLOGICAL WASTE, HUMAN OR ANIMAL DERIVED SERUMS OR PROTEINS OR ANY OTHER POTENTIALLY INFECTIOUS MATERIAL? YES ☒ NO

I acknowledge that this waste material is neither infectious nor does it contain any organism known to be a threat to human health. This certification is based on my knowledge of the material. Select the answer below that applies:

The waste was never exposed to potentially infectious material. YES NO

Chemical disinfection or some other form of sterilization has been applied to the waste. YES NO

I ACKNOWLEDGE THAT THIS PROFILE MEETS THE CLEAN HARBORS BATTERY PACKAGING REQUIREMENTS. YES NO

I ACKNOWLEDGE THAT MY FRIABLE ASBESTOS WASTE IS DOUBLE BAGGED AND WETTED. YES NO

SPECIFY THE SOURCE CODE ASSOCIATED WITH THE WASTE: **G44** SPECIFY THE FORM CODE ASSOCIATED WITH THE WASTE: **W301**





## E. CONSTITUENTS

Are these values based on testing or knowledge?

Knowledge ☒ Testing

If based on knowledge, please describe the rationale applied to identify and characterize the waste material (ex., include reference to Material Safety Data Sheets, process considerations, operating procedures).

Please indicate which constituents below apply. Concentrations must be entered when applicable to assist in accurate review and expedited approval of your waste profile. Please note that the total regulated metals and other constituents sections require answers.

RCRA	REGULATED METALS	REGULATORY LEVEL (mg/l)	TCLP mg/l	TOTAL	UOM	NOT APPLICABLE
D004	ARSENIC	5.0		8.2000000	PPM	
D005	BARIUM	100.0		130.0000000	PPM	
D006	CADMIUM	1.0		3.3000000	PPM	
D007	CHROMIUM	5.0		120.0000000	PPM	
D008	LEAD	5.0		370.0000000	PPM	
D009	MERCURY	0.2		0.5800000	PPM	
D010	SELENIUM	1.0		0.7500000	PPM	
D011	SILVER	5.0		0.4600000	PPM	
<b>VOLATILE COMPOUNDS</b>						
D018	BENZENE	0.5				
D019	CARBON TETRACHLORIDE	0.5				
D021	CHLOROBENZENE	100.0				
D022	CHLOROFORM	6.0				
D028	1,2-DICHLOROETHANE	0.5				
D029	1,1-DICHLOROETHYLENE	0.7				
D035	METHYL ETHYL KETONE	200.0				
D039	TETRACHLOROETHYLENE	0.7				
D040	TRICHLOROETHYLENE	0.5				
D043	VINYL CHLORIDE	0.2				
<b>SEMI-VOLATILE COMPOUNDS</b>						
D023	o-CRESOL	200.0				
D024	m-CRESOL	200.0				
D025	p-CRESOL	200.0				
D026	CRESOL (TOTAL)	200.0				
D027	1,4-DICHLOROBENZENE	7.5				
D030	2,4-DINITROTOLUENE	0.13				
D032	HEXACHLOROBENZENE	0.13				
D033	HEXACHLOROBUTADIENE	0.5				
D034	HEXACHLOROETHANE	3.0				
D036	NITROBENZENE	2.0				
D037	PENTACHLOROPHENOL	100.0				
D038	PYRIDINE	5.0				
D041	2,4,5-TRICHLOROPHENOL	400.0				
D042	2,4,6-TRICHLOROPHENOL	2.0				
<b>PESTICIDES AND HERBICIDES</b>						
D012	ENDRIN	0.02				
D013	LINDANE	0.4				
D014	METHOXYCHLOR	10.0				
D015	TOXAPHENE	0.5				
D016	2,4-D	10.0				
D017	2,4,5-TP (SILVEX)	1.0				
D020	CHLORDANE	0.03				
D031	HEPTACHLOR (AND ITS EPOXIDE)	0.008				

OTHER CONSTITUENTS	MAX	UOM	NOT APPLICABLE
BROMINE			<input checked="" type="checkbox"/>
CHLORINE			<input checked="" type="checkbox"/>
FLUORINE			<input checked="" type="checkbox"/>
IODINE			<input checked="" type="checkbox"/>
SULFUR			<input checked="" type="checkbox"/>
POTASSIUM			<input checked="" type="checkbox"/>
SODIUM			<input checked="" type="checkbox"/>
AMMONIA			<input checked="" type="checkbox"/>
CYANIDE AMENABLE			<input checked="" type="checkbox"/>
CYANIDE REACTIVE			<input checked="" type="checkbox"/>
CYANIDE TOTAL			<input checked="" type="checkbox"/>
SULFIDE REACTIVE			<input checked="" type="checkbox"/>

HOCs	PCBs
NONE	NONE
<input checked="" type="checkbox"/> < 1000 PPM	<input checked="" type="checkbox"/> < 50 PPM
>= 1000 PPM	>= 50 PPM
IF PCBs ARE PRESENT, IS THE WASTE REGULATED BY TSCA 40 CFR 761?	
YES	<input checked="" type="checkbox"/> NO

## ADDITIONAL HAZARDS

DOES THIS WASTE HAVE ANY UNDISCLOSED HAZARDS OR PRIOR INCIDENTS ASSOCIATED WITH IT, WHICH COULD AFFECT THE WAY IT SHOULD BE HANDLED?

YES ☒ NO (If yes, explain)

## CHOOSE ALL THAT APPLY

DEA REGULATED SUBSTANCE  
POLYMERIZABLEEXPLOSIVE  
RADIOACTIVEFUMING  
REACTIVE MATERIALOSHA REGULATED CARCINOGENS  
☒ NONE OF THE ABOVE



## F. REGULATORY STATUS

YES	<input checked="" type="checkbox"/>	NO	USEPA HAZARDOUS WASTE?	
<input checked="" type="checkbox"/>	YES	NO	DO ANY STATE WASTE CODES APPLY?	
			611	
			Texas Waste Code	
YES	<input checked="" type="checkbox"/>	NO	DO ANY CANADIAN PROVINCIAL WASTE CODES APPLY?	
YES	<input checked="" type="checkbox"/>	NO	IS THIS WASTE PROHIBITED FROM LAND DISPOSAL WITHOUT FURTHER TREATMENT PER 40 CFR PART 268?	
			LDR CATEGORY:	Not subject to LDR
			VARIANCE INFO:	
YES	<input checked="" type="checkbox"/>	NO	IS THIS A UNIVERSAL WASTE?	
YES	<input checked="" type="checkbox"/>	NO	IS THE GENERATOR OF THE WASTE CLASSIFIED AS CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR (CESQG)?	
YES		NO	IS THIS MATERIAL GOING TO BE MANAGED AS A RCRA EXEMPT COMMERCIAL PRODUCT, WHICH IS FUEL (40 CFR 261.2 (C)(2)(II))?	
YES	<input checked="" type="checkbox"/>	NO	DOES TREATMENT OF THIS WASTE GENERATE A F006 OR F019 SLUDGE?	
YES		NO	IS THIS WASTE STREAM SUBJECT TO THE INORGANIC METAL BEARING WASTE PROHIBITION FOUND AT 40 CFR 268.3(C)?	
YES	<input checked="" type="checkbox"/>	NO	DOES THIS WASTE CONTAIN VOC'S IN CONCENTRATIONS >=500 PPM?	
YES		NO	DOES THE WASTE CONTAIN GREATER THAN 20% OF ORGANIC CONSTITUENTS WITH A VAPOR PRESSURE >= .3KPA (.044 PSIA)?	
YES	<input checked="" type="checkbox"/>	NO	DOES THIS WASTE CONTAIN AN ORGANIC CONSTITUENT WHICH IN ITS PURE FORM HAS A VAPOR PRESSURE > 77 KPA (11.2 PSIA)?	
YES	<input checked="" type="checkbox"/>	NO	IS THIS CERCLA REGULATED (SUPERFUND) WASTE ?	
YES	<input checked="" type="checkbox"/>	NO	IS THE WASTE SUBJECT TO ONE OF THE FOLLOWING NESHAP RULES?	
			Hazardous Organic NESHAP (HON) rule (subpart G)	Pharmaceuticals production (subpart GGG)
YES		NO	IF THIS IS A US EPA HAZARDOUS WASTE, DOES THIS WASTE STREAM CONTAIN BENZENE?	
YES		NO	Does the waste stream come from a facility with one of the SIC codes listed under benzene NESHAP or is this waste regulated under the benzene NESHAP rules because the original source of the waste is from a chemical manufacturing, coke by-product recovery, or petroleum refinery process?	
YES		NO	Is the generating source of this waste stream a facility with Total Annual Benzene (TAB) >10 Mg/year?	
			What is the TAB quantity for your facility?	
				Megagram/year (1 Mg = 2,200 lbs)
			The basis for this determination is: Knowledge of the Waste Or Test Data	Knowledge Testing
			Describe the knowledge:	

## G. DOT/TDG INFORMATION

DOT/TDG PROPER SHIPPING NAME:

NONE, NON RCRA HAZARDOUS WASTE SOLIDS, (LEAD), N/A

## H. TRANSPORTATION REQUIREMENTS

ESTIMATED SHIPMENT FREQUENCY ☒ ONE TIME WEEKLY MONTHLY QUARTERLY YEARLY OTHER

CONTAINERIZED		BULK LIQUID		<input checked="" type="checkbox"/> BULK SOLID
0-0	CONTAINERS/SHIPMENT	GALLONS/SHIPMENT: 0 Min -0 Max	GAL.	SHIPMENT UOM: <input checked="" type="checkbox"/> TON YARD
STORAGE CAPACITY:		TONS/YARDS/SHIPMENT: 3.00 Min - 5.00 Max		
CONTAINER TYPE:				
	CUBIC YARD BOX	PALLET		
	TOTE TANK	DRUM		
<input checked="" type="checkbox"/>	OTHER:	DRUM SIZE:		

## I. SPECIAL REQUEST

COMMENTS OR REQUESTS:

Report 72980, sample ID WB001

## GENERATOR'S CERTIFICATION

I hereby certify that all information submitted in this and attached documents is correct to the best of my knowledge. I also certify that any samples submitted are representative of the actual waste. If Clean Harbors discovers a discrepancy during the approval process, Generator grants Clean Harbors the authority to amend the profile, as Clean Harbors deems necessary, to reflect the discrepancy.

AUTHORIZED SIGNATURE

NAME (PRINT)

TITLE

DATE